# ABSTRACT

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| Title of Dissertation: | REVISITING THE BOTTLENECK HYPOTHESIS: EXAMINING THE CONTRIBUTION OF SEXUAL IDENTITY DEVELOPMENT TO THE CAREER EXPLORATION AND DECISION-MAKING OF SEXUAL MINORITY COLLEGE STUDENTS |
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Cheryl Hetherington's (1991) "bottleneck hypothesis" maintains that the process of sexual identity development can conflict with the career development of sexual minority college students. Though it has received some research support, inquiry on the hypothesis has been challenged by conceptual and methodological considerations. This study used a social cognitive career theory framework to investigate whether sexual minority college students have greater difficulties in the career exploration and decision-making process than heterosexual students and whether indicators of both psychological and social aspects of sexual identity development explain unique variance in several career decision-making outcomes.

The sample consisted of $N$ = 512 undergraduate students who completed an online survey ($n$ = 225 sexual minority and $n$ = 287 heterosexual). Results showed no significant differences in the mean scores of the two groups on career decision-making process and outcome variables, such as career decision-making anxiety and level of career decidedness. The same sets of social cognitive predictors also accounted for significant variance in career-related exploratory goals, career decision-making anxiety, and career decidedness in both groups of students. One group-specific difference was, however, observed at the level of individual social cognitive predictors: the presence of social support for career decision-making uniquely predicted exploratory goals in the heterosexual sample but not in the sexual minority sample. In addition, a few indicators of sexual identity development explained unique variance in the career exploration and decisional outcomes beyond the social cognitive predictors. Implications for the bottleneck hypothesis and future research on sexual minority students' career exploration and decision-making are discussed.

# REVISITING THE BOTTLENECK HYPOTHESIS: EXAMINING THE CONTRIBUTION OF SEXUAL IDENTITY DEVELOPMENT TO THE CAREER EXPLORATION AND DECISION-MAKING OF SEXUAL MINORITY COLLEGE STUDENTS

by

Taylor Robin Morris

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Advisory Committee:
Professor Robert W. Lent, Chair
Professor Ellen S. Fabian
Clinical Assistant Professor Kelly M. Lee
Associate Professor Jonathan J. Mohr
Associate Professor Richard Q. Shin

Dedication

I dedicate this dissertation to Dr. Ellis and Mrs. Janie Knox, my amazingly supportive, witty, and kind grandparents. You both have encouraged me so much and have been great role models for pursuing a doctoral degree. Your curiosity, stories, and ever-so-full life journeys have inspired, and continue to inspire, my own academic career. I thank you from the bottom of my heart!

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# Chapter 1: Introduction

Sexual minority (i.e., Lesbian, Gay, Bisexual, and Queer) people face distinct career challenges, including hiring discrimination, identity-based workplace harassment, and perceptions of a "lavender ceiling" on their career advancement (Ragins & Cornwell, 2001; Tilcsik, 2011; Tilcsik et al., 2015). They also endorse unique career barriers such as a lack of domestic partnership benefits, coming-out issues, job discrimination and/or loss, internalized homophobia, and making greater efforts to compensate in light of others' negative views (Parnell et al., 2012). These experiences may contribute negatively to sexual minority peoples' economic security, and increase the perceived need to make self-preserving, but vocationally adverse, choices such as avoiding co-workers, staying home from work, or quitting their jobs (Fidas & Cooper, 2018).

## Sexual Minority College Students' Career Development

Sexual minority college students also face unique challenges, such as heterosexist discrimination and negative campus climates for LGBTQ people (Rankin et al., 2010). These challenges have been associated with negative academic outcomes, such as perceiving less academic social support and having fewer intentions to persist as a college student (Morris & Lent, 2019). Evidence also suggests these students have a lower sense of mental, physical, and social well-being (Crawford & Ridner, 2018) and a higher incidence of both mental and physical health concerns than heterosexual college students (Klein & Dudley, 2014).

Identity-related challenges may also extend to career development. For example, evidence suggests that sexual minority students' sexual identity development and expectations of stigma are linked to their career exploration and decision-making

(Schmidt & Nilsson, 2006; Schneider & Dimito, 2010). Additionally, a 2009 multi-campus analysis of college students' experiences found that sexual minority students endorsed career related difficulties at a higher rate than heterosexual students (Oswalt & Wyatt, 2011). However, within the past thirty years, there have only been limited attempts to study sexual minority students' experiences within the career exploration and decision-making process.

One notable perspective regarding sexual minority college students' vocational development is Cheryl Hetherington's (1991) proposal of a "bottleneck effect" between sexual minority students' simultaneous sexual identity development and career development (henceforth referred to as the *bottleneck hypothesis*). Specifically, she suggested many sexual minority students experience a great amount of their sexual identity development process during their college years, with developmental tasks such as recognizing non-heterosexuality, finding a label for oneself, disclosing one's identity, and integrating sexual orientation into a broader image of self (Levine & Evans, 1991). These formative aspects of sexual identity development may be difficult to navigate because they are associated with distressing psychological conflicts, including identity uncertainty and internalized homonegativity (Mohr & Fassinger, 2000; Mohr & Kendra, 2011).

Due to the expected stresses incurred during sexual minority students' sexual identity development, Hetherington (1991) suggested that they may only be able to devote limited focus to the simultaneous process of career development and thus progress in this domain may be "put on hold" until the individual has reached the final (integration) stage of their sexual identity development. As a result, there may be a developmental bottleneck effect in which sexual minority students' sexual identity

development competes with their career development, with students putting relative focus on activities such as finding a place in the sexual minority community and coping with negative emotions related to their sexual identity. She additionally stated that navigating through these processes can create barriers to engaging in career related activities (e.g., being unwilling to disclose one's sexual orientation to career counselors).

It should be noted that Hetherington's proposal is a commentary on experiences that sexual minority college students may have and not a fully developed theory. Thus, it does not detail which career development outcomes (e.g., career decidedness) are negatively impacted. Additionally, she does not specify whether the bottleneck hypothesis is intended to be viewed as a limited within-group phenomenon (i.e., a small subset of sexual minority students cope with the bottleneck while most do not) or whether it is prominent enough to constitute a between-group phenomenon (i.e., enough sexual minority students cope with the bottleneck that it constitutes a systemic disadvantage when compared to heterosexual students). Given this ambiguity and the ample evidence of differences in sexual minority and heterosexual peoples' career development broadly, the bottleneck hypothesis is worthy of additional consideration as a phenomenon that may differentiate the career development of heterosexual and sexual minority college students.

Some research supports the notion of a collegiate bottleneck of sexual identity development and career development. Tomlinson and Fassinger (2003) found that, for lesbian college students, attitudes suggesting advanced sexual identity development (per Fassinger's 1998 Lesbian Identity Questionnaire) correlated positively with vocational purpose and psychological vocational development, though these attitudes generally did

not predict either career-related outcome in multiple regression analyses. Schmidt and Nilsson (2006) found that a composite measure of "inner sexual identity conflict" correlated negatively with career maturity ($r$ = -.30) and positively with career indecision ($r$ = .21). Additionally, the composite measure predicted 9% of the variance in career maturity and 4% of the variance in career indecision in a hierarchal regression. Lyons, Brenner, and Lipton's (2010) study directly asked about interference between sexual identity development and career development. They found that people who endorsed their sexual identity development as being more important than their career development on an author-designed measure of prioritization perceived significantly more sexual identity related barriers to vocational success than individuals who did not perceive a conflict between the two processes.

Recent studies have researched related topics. For instance, Russon and Schmidt (2014) investigated the role of authenticity in one's thoughts, behaviors, and interpersonal interactions (as defined in Kernis & Goldman, 2006) in predicting sexual minority college students' career decision-making self-efficacy. They conducted a simultaneous regression and found that the four facets of authenticity collectively predicted significant variance in career decision-making self-efficacy ($R^2$ = .22). Interestingly, both awareness (the knowledge of personal strengths, weaknesses, motivations, and feelings) and unbiased processing (objectivity with regard to personal strengths and weaknesses) were uniquely significant predictors while authenticity in one's behavior (defined as not seeking to please others regardless of their own needs) and social relationships (defined as focusing on truthfulness in their close relationships) were not.

Finally, Winderman et al. (2018) investigated the role various factors may play in predicting several facets of career indecision among sexual minority students (e.g., decisional anxiety and interpersonal conflicts related to career decision-making). Two of them were internalized homonegativity and sexual identity concealment, constructs associated with earlier sexual identity development. The study's bivariate correlations showed significant relationships for these constructs. Notably, identity concealment and internalized homonegativity both correlated significantly with increased interpersonal conflicts related to career development ($r$ = .29 and $r$ = .18). Additionally, identity concealment correlated with career decision-making anxiety ($r$ = .25). However, when these variables were entered together in a hierarchical regression with several other main effects and interaction variables, only the full model predicting interpersonal conflicts was significant.

Despite the availability of findings suggesting the tenability of the bottleneck hypothesis, there are reasons to revisit its potency and manifestations. First, the theory was developed at a time when there may have been considerably more stigma linked to sexual orientation. For instance, in a 1992 Gallup poll, only 48% of U.S. adults believed that lesbian and gay sexual relationships should be legal. In 2020, that percentage was 72% (Gallup Inc., 2020). Thus, sexual minority people, at least within the United States, may not need to cope with as much stigma and, in turn, their sexual identity development may be less demanding than it would have been had they been born two decades prior.

Second, there is evidence that young people may begin the sexual identity development process prior to college in more recent years. For example, in a 2013 Pew survey of sexual minority adults, the median age of initial sexual identity disclosure was

21 for respondents aged 50 years or older, but 17 for respondents who were 18–29 years old (Taylor, 2013). If it is the case that sexual minority individuals are, on average, coming out and developing their sexual identity before college, then there may be no bottleneck during the college years. Instead, the processes are more sequential, with the bulk of sexual identity development happening first and the bulk of collegiate career development occurring after.

Finally, the bottleneck hypothesis largely neglects to explain which components of the career development process are stunted during sexual identity development, making tests of the theory difficult to conduct. Therefore, a new examination of the bottleneck hypothesis is warranted and may have practical implications for assisting sexual minority college students' career development.

**Social Cognitive Model of Career Self-Management**

A career framework that may be useful for reexamining the bottleneck hypothesis is the career self-management (CSM) model of social cognitive career theory (Lent & Brown, 2013). The CSM model is aimed at understanding the adaptive behaviors that people employ to anticipate and adjust to a wide array of challenges in educational and work settings, including but not limited to the job search process (Lim et al., 2016), multiple role planning (Roche et al., 2017), and workplace sexual identity management (Tatum, 2018; Tatum et al., 2017). Importantly, it has also been used to model the process of career exploration and decision-making in college student samples (Lent et al., 2017; Lent, Morris, et al., 2019; Lent, Wang, et al., 2019). This application of the CSM model may be especially useful for observing a potential bottleneck because it includes defined intermediate markers of productive career exploration and decision-making, such

as career exploration and decision-making self-efficacy, and outcomes, such as career decidedness, that may indicate how sexual identity development may interact with the career development process. Therefore, this application of the CSM model is the focal point of the present study.

The CSM model includes six classes of predictors: (a) personality traits (i.e., person inputs) and affective dispositions that predispose one to experience pleasant or unpleasant emotions, (b) contextual supports, referring to the resources and social supports available for pursuing one's goals and building self-efficacy, (c) prior learning experiences, which are experiences that contribute to one's sense of self-efficacy or outcome expectations, (d) self-efficacy, or confidence in one's ability to successfully "manage specific tasks necessary for career preparation, entry, adjustment, or change" (Lent & Brown, 2013, p. 561), (e) outcome expectations, or beliefs about the outcomes of pursuing a particular career related action, and (f) exploratory goals, referring to the intentions to perform career related actions. There are three classes of outcomes in the model that are relevant to career decision-making: (a) exploratory/decisional actions, (b) affective outcomes, and (c) decisional status. According to the model, those with more favorable affective traits and greater levels of contextual supports, favorable learning experiences, self-efficacy, and positive outcome expectations are more likely to have intentions to pursue career advancing behavior, to act on these intentions, to have more positive affective outcomes, and to have greater decidedness within a given domain of

career development (e.g., career decision-making). Figure 1 displays the CSM model as applied to career exploration and decision-making.

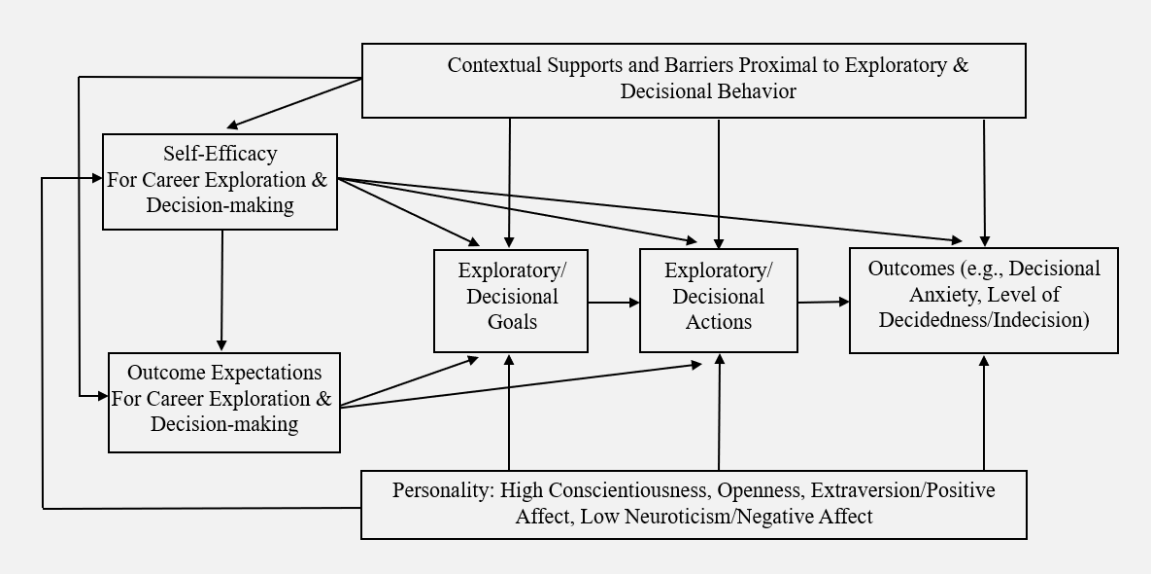


*Figure 1*. The career self-management (CSM) model as applied to career exploration and decision-making behavior. Adapted from Lent and Brown (2013) with permission.

Several studies have shown support for the CSM model as a framework for understanding college students' career exploration and decision-making self-management. For example, Lent et al.'s (2016) results supported the hypothesized links of self-efficacy, outcome expectations, and social support to exploratory goals, and of self-efficacy to decisional anxiety and career decidedness. Other model-testing studies have found that self-efficacy is directly linked to career decidedness and is also linked to career exploration goals directly (Lent et al., 2017) and/or indirectly via outcome expectations (Ireland & Lent, 2018). Penn and Lent's (2018) study of personality-based predictors of career decidedness and career decision-making anxiety found that

neuroticism, extraversion, and conscientiousness all predicted self-efficacy, which in turn predicted both decisional anxiety and career decidedness.

Lent, Morris, and colleagues (2019) also expanded this program of research by conducting a longitudinal study of the CSM model. They measured predictors of career decision-making self-efficacy, outcome expectations, social support, conscientiousness, exploratory actions, and exploratory goals, as well as the outcomes of decisional anxiety and career decidedness at three time points (beginning of the academic year, four months later, and seven months later). They found that self-efficacy was a significant predictor of decisional anxiety at both T1-T2 and T2-T3 comparison points, exploratory actions were predictive of career decidedness at the T1-T2 comparison point, and social support was predictive of career decidedness at the T2-T3 comparison point. However, other hypothesized relationships, such as exploratory actions predicting decisional anxiety and career decidedness at the T2-T3 comparison point, were not supported.

The CSM model could be applicable to modeling the experiences of sexual minority students because it accounts for universal factors (such as self-efficacy), while also being amenable to the addition of predictors unique to sexual minority students. Thus, to explore potential intergroup factors of the bottleneck hypothesis, the present study compared heterosexual and sexual minority students' career exploration and decision-making processes using the core CSM variables and, to explore intragroup factors, additional variables measuring sexual identity development were introduced for the intragroup analyses.

Adding sexual identity development variables to the CSM model would be a new step, as the CSM model has not been used to model sexual minority college students'

career exploration and decision-making. However, the CSM model has been applied to sexual minority workers' career self-management. Notably, Tatum (2018) and Tatum et al. (2017) studied sexual minority workers' sexual identity self-management by creating measures representing the core CSM variables, such as self-efficacy and outcome expectations, as they relate to sexual identity disclosure. However, they also added concealment motivation (i.e., the desire to stay closeted) as a person input and it offered unique predictive value in key outcomes. Therefore, we may take a similar approach of using the core CSM variables, as they apply to career exploration and decision-making, along with sexual identity specific variables.

Given the approach outlined above, it is important to consider how sexual identity development variables would fit into a modified CSM model. One could consider them as person inputs in the model since one's attitudes and behaviors regarding sexual identity can be considered personal qualities. However, there is not a strong literature base to justify hypothesizing that sexual identity development has the same relational paths as a person input within the model. Thus, rather than assume that sexual identity development functions within the model the same as any other person input, this study used an empirical approach to determine if/how sexual identity development variables account for additional unique variance in career decision outcomes when included with the core CSM variables.

Another consideration is in how to measure sexual identity development. Sexual identity development has been assessed in a variety of ways in studies relevant to the bottleneck hypothesis, and there is not currently a consensus on a single best approach. Different options that informed the current approach are, therefore, reviewed below.

**Measurement of Sexual Identity Development**

Hetherington (1991) used a conceptualization of sexual identity development created by Levine and Evans (1991) as an aggregate of multiple contemporaneous theories. Their objective in building this aggregate was to combine the common factors of multiple theories (e.g., Cass, 1979; Lee, 1977; Milton & McDonald, 1984). The factors they identified were psychological factors, such as internalized homonegativity or self-labeling of sexual orientation, and social factors, such as coming out and exploring the sexual minority community. Their resultant model had four stages: (a) self-awareness, the process of recognizing one's non-heterosexuality, (b) self-labeling, the process of identifying oneself as a sexual minority individual, (c) community involvement and disclosure, which is the process of immersing oneself in the LGBTQ community and disclosing one's sexual identity outwardly, and (d) identity integration, the integration of one's sexual identity within the larger self-concept. Following this conceptualization, Hetherington posited that the bottleneck between sexual identity and career development would cease once a student had reached the final stage of their sexual identity development.

Researchers studying sexual minority college students' career development have used various approaches for measuring sexual identity development. For instance, Tomlinson and Fassinger (2003) used the Lesbian Identity Questionnaire (Fassinger, 1998), which contained subscales that correspond to four stages of identity development (awareness, exploration, deepening/commitment, and internalization/synthesis). Though these labels are slightly different than those used by Hetherington, they appear to have

overlapping meaning and incorporate both psychological and social factors (e.g., internalization/synthesis may be analogous to identity integration).

Schmidt and Nilsson (2006) focused on Hetherington's initial premise that individuals have a limited capacity to focus on both sexual identity development and career development processes and represented participants' attention consuming sexual identity conflict (which is associated with early sexual identity development) using the identity confusion, internalized homonegativity, and difficult process subscales of Mohr and Fassinger's (2000) Lesbian and Gay Identity Scale. However, this approach neglected social aspects of sexual identity development, such as disclosure or concealment of one's identity.

Lyons and colleagues (2010) conceptualized sexual identity development and its potential conflict with career development in terms of developmental "interference." They surveyed participants using two author-constructed scales. One of the scales measured beliefs regarding sexual identity development as superseding career development (e.g., "I've put selecting a career on hold…while I develop as a gay, lesbian or bisexual person"). The other measured beliefs regarding career development superseding sexual identity development (e.g., "My career has been more important than my sexual orientation identity"). They then categorized participants based on their level of self-endorsed interference between the two aspects of their lives.

**Application of Sexual Identity Development to the CSM Model**

Each of the approaches to defining sexual identity development has its own advantages and disadvantages. For example, Tomlinson and Fassinger's (2003) use of measures representing sexual identity development stages is most faithful to the original

bottleneck hypothesis in terms of explicitly measuring "stages" of participants' identity development. However, discourse on the development of sexual minority individuals has shifted. Notably, many sexual minority individuals may consider their sexual identity to be fluid (Katz-Wise & Hyde, 2015) and longitudinal research has supported such notions. For example, Diamond (2008) conducted a 10-year longitudinal study of sexual minority women and found that, over the course of the study, approximately two-thirds of the participants had shifted their sexual identity label at least once. Additionally, many sexual minority individuals may not self-identify with traditional labels of sexual identity, a core process in multiple sexual identity development models (e.g., Cass, 1979; Lee, 1977). For example, Brooks and Quina (2009) found that, in a community sample of non-heterosexual women, approximately 16% endorsed their identity as, "I do not label my sexual orientation." Lyons and colleagues' (2010) approach addressed the empirical question of how conflicts between simultaneous processes may impact career development. However, their measure did not capture sexual identity development as an independent construct, only the perception of it conflicting with career development.

Since sexual identity development may be best considered a person input from a social cognitive perspective, the present study adopted an approach like that of Schmidt and Nilsson (2006). These authors used subscales of the Lesbian and Gay Identity Scale (Mohr & Fassinger, 2000) to operationalize the concept of "inner sexual identity conflict," that is, internal distress or confusion owing to one's process of self-identifying as a sexual minority group member. However, I adapted their approach in two ways. First, to observe the contribution of specific sexual identity conflicts, Schmidt and Nilsson's (2006) composite measure was split into its individual subscales of identity

uncertainty (renamed from identity confusion in a more recent version of this measure), internalized homonegativity, and difficulty with the identity development process (difficult process). Second, the present study incorporated identity disclosure and identity concealment, two distinct yet related constructs that capture the socially oriented sexual identity self-management aspect of sexual identity development. Thus, these five variables together incorporate both psychological and social aspects of sexual identity development without including implicit assumptions about one's identity development "stage."

**Present Study**

The bottleneck hypothesis has been cited as a framework for understanding sexual minority college students' challenges in career development either by name (e.g., Prince, 2013) or description (e.g., Patton & McMahon, 2014) in recent years. However, given societal changes in acceptance and earlier identity development (Gallup Inc., 2020; Taylor, 2013), sexual identity development may not commonly conflict with collegiate career development for sexual minority college students anymore. Specifically, it is worth examining (a) if sexual minority students career development progress and process differs from heterosexual students, (b) if sexual minority college students' career development relates to concurrent psychological and social aspects of sexual identity development, and (c) how specific psychological and social aspects of sexual identity development may interact with the career exploration and decision-making process.

Therefore, the present study will assess differences in heterosexual and sexual minority college students' career development using the CSM model and identify which (if any) sexual identity development variables may be uniquely relevant for sexual

minority college students. For this study, all the core predictors of the CSM model will be represented except for general personality inputs (e.g., extroversion) because there is little reason to suspect that they will differentiate the career exploration and decision-making of sexual minority and heterosexual students. Additionally, exploratory goals will be included in regression analyses, but engagement in exploratory actions will be omitted because prospective goals cannot be used to predict behaviors already performed. The hypotheses are listed below.

**Research Question 1:** Do sexual minority college students differ significantly from heterosexual college students in mean-level (a) career exploration and decision-making self-efficacy, (b) career exploration and decision-making outcome expectations, (c) career exploration and decision-making social support, (d) career-related exploratory goals, (e) exploratory actions, (f) decisional anxiety, or (g) career decidedness?

**Hypothesis 1:** The set of relevant CSM predictors (self-efficacy, outcome expectations, and social support) will account for significant variation in exploratory goals for sexual minority students.

**Hypothesis 2:** The set of relevant CSM predictors (self-efficacy, outcome expectations, and social support) will account for significant variation in exploratory goals for heterosexual students.

**Hypothesis 3a and 3b:** The set of relevant CSM predictors (self-efficacy and social support) will account for significant variation in (a) level of decisional anxiety and (b) career decidedness in sexual minority students.

**Hypothesis 4a and 4b:** The set of relevant CSM predictors (self-efficacy and social support) will account for significant variation in (a) level of decisional anxiety and (b) career decidedness in heterosexual students.

**Research Question 2:** Are the relationships of the relevant CSM predictors to the dependent variables moderated by sexual identity status?

**Hypothesis 5:** The set of sexual identity variables (identity uncertainty, internalized homonegativity, difficulty with the identity development process, identity disclosure, and identity concealment) will account for significant unique variance in exploratory goals, above and beyond the set of relevant CSM predictors, in sexual minority students.

**Hypothesis 6a and 6b:** The set of sexual identity variables (identity uncertainty, internalized homonegativity, difficulty with the identity development process, identity disclosure, and identity concealment) will account for significant unique variance in (a) level of decisional anxiety and (b) career decidedness, above and beyond the set of relevant CSM predictors, in sexual minority students.

**Research Question 3:** Which specific sexual identity variables will account for significant unique variance in (a) exploratory goals, (b) decisional anxiety, and (c) career decidedness, after controlling for all of the other (CSM and sexual identity) predictors in sexual minority students?

# Chapter 2: Method

## Statistical Power Considerations

The original plan had been to recruit at least 300 sexual minority participants and 300 heterosexual participants. However, given the challenges encountered in recruiting samples of this size on the original online platform (Facebook), a more efficient platform was chosen (Qualtrics Panels). Power analyses were revisited to balance statistical power with logistical considerations (e.g., the financial costs of participant recruitment). Thus, the regression and mean comparison power analyses were recomputed using somewhat relaxed power parameters. First, a test of $\Delta R^2$ in a hierarchal linear regression is required to address Hypotheses 1–6b. Of these regressions, Hypothesis 5 is the most demanding of participant size. For this hypothesis, if an intermediate between a small and medium effect size ($f^2 = .08$) is assumed, and there are eight predictors, approximately 212 sexual minority participants are needed to achieve .90 power (Faul et al., 2009).

Second, independent sample *t*-tests are required to address Research Question 1, which involves a series of mean comparisons for the CSM variables between the sexual minority and heterosexual students. If an intermediate between a small and medium effect size ($d = .35$) is assumed, approximately 173 participants per group are needed to achieve .90 power (Faul et al., 2007). Taken together, these revised analyses suggest that 220 participants per group should be a sufficient sample size and thus was considered the new participant recruitment target.

## Participants

One thousand and thirty-four college students were deemed eligible based on a screening survey, consented to participate, and completed at least one measure of the survey. Of these, 30 were removed based on the suspicion of intentionally careless

responses (e.g., giving irrelevant answers to text response questions or repeatedly selecting the same response over the majority of measures) and 19 were deemed ineligible based on their logically inconsistent responses (e.g., enrolling from an LGBTQ Qualtrics Panel, but identifying as heterosexual). Additionally, because the target population is individuals early in their career development, seven were removed for being older than 30. Of the remaining 978 participants, 921 completed the entire survey.

**Validity analyses.** Inattention can adversely impact the statistical power and validity of research (Maniaci & Rogge, 2014). Though many protocols to reduce the proportion of inattentive responses can be used, choosing an appropriate protocol may require some degree of subjective judgement (Meade & Craig, 2012). Thus, to remove a sizable portion of the most inattentive responses efficiently, a simple two-step approach supported by Maniaci and Rogge (2014) was selected. The first step was to assess participants' responses to a single item assessing attention (referred to as a directed question). This item asked participants to select "disagree" to a particular item and was placed within the exploratory goals scale. Out of 921 participants who completed the entire survey, 367 (40%) failed the directed question, leaving 554 participants who completed the entire survey and passed the attention check.

The second step was to review responses to remove those with unduly brief response times. Based on initial piloting, the author reasoned it would be difficult to complete the shorter version of the survey (heterosexual version) with due diligence in less than three minutes. However, piloting should serve only as an initial basis for a more standard guideline – of which there are many. For instance, Huang and colleagues (2012) argued for a logical cut-off time of two seconds per item. Additionally, the author's

colleagues' research has supported 1/3 of the mean response time as a cut-off (Ireland & Lent, 2020). However, both guidelines produced cut-off times significantly shorter than three minutes. Thus, per the recommendations of the Qualtrics Panel administrator, a more conservative cut-off time of ½ of the median response time was chosen. A benefit of this approach is that the resultant cut-off time is response driven and not disproportionately influenced by outlier responses. Since the median response time was 344 seconds for heterosexual students and 515 seconds for sexual minority students, 172 seconds and 257 seconds respectively were chosen as the cut-off. Following this guideline, out of the 554 remaining responses, 225 responses from sexual minority students and 287 responses from heterosexual students were considered valid, making a total sample of 512 participants.

**Missing data analyses.** Of the 57 participants who did not finish the survey, 22 had passed the attention check and 35 had not gotten to it before exiting the survey. A test of the pattern of missing data (Little, 1988) indicated that the data were missing completely at random ($\chi^2 = 472.04$, $df = 477$, $p = .56$). Given the adequate sample size with complete data ($N = 512$), the missing data were handled via listwise deletion.

**Sexual minority students.** Demographic information for both the sexual minority and heterosexual student samples is displayed in Table 1. Sexual minority participants ranged in age from 18 to 29 ($M = 20.16$, $Mdn = 20$, $SD = 1.97$) and included 62.7% ($n = 141$) women, 28.9% ($n = 65$) men, and smaller percentages of transmen (1.8%, $n = 4$), transwomen (.4%, $n = 1$), non-binary/gender non-conforming individuals (5.3%, $n = 12$), and other identities (.9%, $n = 2$). They identified as lesbian (10.2%, $n = 23$), gay (12.4%, $n = 28$), bisexual (64.0%, $n = 144$), queer (4.0%, $n = 9$) and other orientations (e.g.,

asexual; 9.3%, *n* = 21). In terms of racial/ethnic group, 12.0% (*n* = 27) were Black/African American, 17.3% (*n* = 39) were Hispanic American or Latina/o, 55.6% (*n* = 125) were White or European American, 5.3% (*n* = 12) were Asian/Pacific Islander American, .4% (*n* = 1) were Native American, and 9.3% (*n* = 21) were multiracial. In terms of academic standing, 33.3% (*n* = 75) were freshmen, 28.0% (*n* = 63) sophomore, 21.8% (*n* = 49) junior, and 16.9% (*n* = 38) senior. They represented multiple geographic regions in the U.S., with 12.9% (*n* = 29) located in the Northeast, 21.8% (*n* = 49) in the Mid-Atlantic, 20.0% (*n* = 45) in the Southeast, 19.6% (*n* = 44) in the Midwest, 10.7% (*n* = 24) in the Southwest, 9.8% (*n* = 22) in the West, and 5.3% (*n* = 12) in the Northwest.

Sexual minority participants also reported the age at which they first started questioning their sexual orientation (*M* = 13.21, *Mdn* = 13, *SD* = 3.07) and the average age at which they knew they were LGBQ (*M* = 15.20, *Mdn* = 16, *SD* = 3.01), with 26 participants stating that they were still questioning whether they were LGBQ or heterosexual. Participants also reported, if they had come out to at least one person, the age at which they told a close friend or family member about their sexual orientation (*M* = 15.81, *Mdn* = 16, *SD* = 2.61). Meanwhile, 25 participants stated that they had not as of yet disclosed their orientation to anyone in these groups.

**Heterosexual students.** Heterosexual participants ranged in age from 18 to 30 (*M* = 20.15, *Mdn* = 20, *SD* = 1.97) and included 62.0% (*n* = 178) women and 38.0% (*n* = 109) men. In terms of racial/ethnic group, 13.9% (*n* = 40) were Black/African American, 5.6% (*n* = 16) were Hispanic American or Latina/o, 61.3% (*n* = 176) were White or European American, 12.9% (*n* = 37) were Asian/Pacific Islander American, 1.4% (*n* = 4) were Native American, 3.8% (*n* = 11) were multiracial, and 1.0% (*n* = 3) reported other

identifications. In terms of academic standing, 30.0% (*n* = 86) were freshmen, 31.0% (*n* = 89) sophomore, 17.8% (*n* = 51) junior, and 21.3% (*n* = 61) seniors. They represented multiple geographic regions in the U.S., with 12.2% (*n* = 35) located in the Northeast, 18.1% (*n* = 52) in the Mid-Atlantic, 27.5% (*n* = 79) in the Southeast, 19.9% (*n* = 57) in the Midwest, 12.2% (*n* = 35) in the Southwest, 5.9% (*n* = 17) in the West, and 4.2% (*n* = 12) in the Northwest.

**Measures**

This study used the CSM model social cognitive measures of career exploration and decision-making self-efficacy, career exploration outcome expectations, career-related exploratory goals, prior career exploratory actions, career decision-making supports, career decision-making anxiety, and career decidedness. Additionally, it used five variables representing both psychological and social aspects of the sexual identity development process. These were perceptions of identity uncertainty, internalized homonegativity, difficulty with the identity development process (difficult process), identity disclosure, and identity concealment. For all measures, reverse scored items were recoded. The sum of the scores was then divided by the number of items on each scale.

**Career exploration and decision-making self-efficacy.** Self-efficacy related to career exploration and decision-making was assessed with the Career Exploration and Decision Self-Efficacy-Brief Decision (CEDSE-BD) Scale (Lent et al., 2016). The CEDSE-BD is an eight item self-report measure that asks participants to indicate their confidence in performing eight career exploration and decision-making tasks (e.g., "Match your skills, values, and interests to relevant occupations") using a 5-point rating scale from *no confidence at all* (0) to *complete confidence* (4). Higher scores reflect

greater self-efficacy. The CEDSE-BD was found to correlate substantially with a prior measure of career decision-making self-efficacy, to predict exploratory goals, decisional anxiety, and career decidedness, and to produce an internal consistency reliability estimate above .90 in the development study (Lent et al., 2016). The CEDSE-BD's predictive utility and adequate internal consistency estimate have been replicated in more recent inquiries (Lent, Morris et al., 2019; Lent, Wang et al., 2019). The internal consistency estimate was $\alpha = .89$ in the present study for sexual minority students and $\alpha = .89$ for heterosexual students.

**Career exploration and decision-making outcome expectations.** Outcome expectations related to career exploration and decision-making were assessed with an expanded version of Betz and Voyten's (1997) measure of positive outcome expectations for engaging in career exploration activities (Lent et al., 2017). Participants were asked to indicate their level of agreement with eight relevant statements (e.g., "If I know about the education I need for different careers, I will make a better career decision") on a 5-point rating scale from *strongly disagree* (1) to *strongly agree* (5). Higher scores reflect more positive outcome expectations. This measure has yielded an internal reliability estimate of .90 or higher in prior research and been found to relate to measures of career exploration and decision-making self-efficacy and career-related exploratory goals (Lent et al. 2017; Lent, Morris, et al., 2019). The internal consistency estimate was $\alpha = .84$ for sexual minority students and $\alpha = .86$ for heterosexual students in the present study.

**Social support for career decision-making.** Social support for career decision-making was measured with the support/guidance subscale of the Influence of Others on Academic and Career Decisions Scale (Nauta & Kokaly, 2001). For this measure,

participants were asked to indicate their agreement with eight statements related to the advice, encouragement, and help that they perceive from others in making career decisions (e.g., "There is someone I can count on to be there if I need support when I make academic and career choices") on a 5-point rating scale from *strongly disagree* (1) to *strongly agree* (5). Higher scores reflect perceptions of greater support. This measure has yielded adequate internal consistency estimates in prior research and has been found to relate in a theory consistent manner with exploratory goals in a cross-sectional study (Lent et al., 2016) and career decidedness in a longitudinal study (Lent, Morris, et al., 2019). The internal consistency estimate was $\alpha = .90$ for sexual minority students and $\alpha = .89$ for heterosexual students in the present study.

**Psychological sexual identity conflicts associated with sexual identity development.** Sexual identity conflict was measured using the identity uncertainty, internalized homonegativity, and difficult process subscales of the Lesbian, Gay, and Bisexual Identity Scale (LGBIS; Mohr & Kendra, 2011). The identity uncertainty subscale measures uncertainty about ones' sexual identity (e.g., "I'm not totally sure what my sexual orientation is"). The internalized homonegativity subscale measures rejection of one's LGB identity (e.g., "If it were possible, I would choose to be straight"). The difficult process subscale measures the perception that one's LGB identity development process has been difficult (e.g., "Admitting to myself that I'm an LGB person has been a very painful process"). For all three measures, higher scores indicate greater sexual identity conflict, and in turn, greater entrenchment within the earlier stages of the sexual identity development process. In the present study, the language of the measure was modified such that mentions of "lesbian, gay, and bisexual" and the acronym "LGB"

were changed to “lesbian, gay, bisexual, and queer” and “LGBQ.” The purpose of this modification was to make the measure mirror the target population.

The items of these subscales ask how much participants agree with each statement on a 6-point rating scale from *strongly disagree* (1) to *strongly agree* (6). Higher scores reflect more sexual identity conflict. These measures yielded theory consistent relationships with relevant constructs in the measure development study (Mohr & Kendra, 2011). For instance, identity uncertainty was associated with having reached LGB identity development milestones more recently, and both the internalized homonegativity and difficult process subscales were associated with increased ego dystonic homosexuality and lower perceptions of life satisfaction.

Schmidt and Nilsson (2006) created an aggregate score based on earlier versions of these scales (LGIS; Mohr & Fassinger, 2000) in a study of the relationship between sexual identity conflict and the career development of sexual minority youth; it yielded an internal consistency estimate of .84. In Mohr and Kendra’s (2011) LGBIS development study, the internal consistency estimates for the identity uncertainty ($\alpha$ = .88 to .93), internalized homonegativity ($\alpha$ = .86 to .93), and difficult process ($\alpha$ = .79 to .88) subscales were all adequate. Additionally, intercorrelations between these subscales ranged from .33 to .44, suggesting that they reflect related yet distinct constructs. The internal consistency estimates for the subscales were, respectively, $\alpha$ = .74, .85, and .79 in the present study.

**Sexual identity management.** Sexual identity management strategies, representing the social aspects of sexual identity development, were measured using the Nebraska Outness Scale (NOS; Meidlinger & Hope, 2014). This measure assesses a

sexual minority individuals' sexual identity management (i.e., "outness") by splitting the construct into two distinct subconstructs – disclosure and concealment. This approach is beneficial because it recognizes that disclosure and concealment are not simply two ends of a single spectrum. Instead, a sexual minority person may manage their level of sexual identity disclosure and concealment concurrently. For example, one may make others aware of their sexual orientation (disclosure), but then avoid discussion or further acknowledgement of their sexual orientation (concealment).

The NOS assesses these two constructs via two subscales. The first measures people's awareness of a sexual minority person's sexual orientation, which is measured using the disclosure subscale (NOS-D). It consists of five items that ask participants what percentage of people in a given group are aware of the participants' sexual orientation on an 11-point scale, from *0%* (0) to *100%* (10). The five groups of people are immediate family members, extended family members, people that one socializes with, people at work/school, and strangers. Higher scores on the disclosure subscale indicate greater disclosure. This measure yielded an internal consistency estimate of $\alpha = .82$ in the development study and correlated in a theory consistent manner with relevant constructs, such as internalized heterosexism and positive affect (Meidlinger & Hope, 2014). Additionally, convergent validity was demonstrated via its high positive correlation with Mohr and Fassinger's (2000) Outness Inventory. The internal consistency estimate was .75 in the present study.

The second aspect of outness assessed by the NOS is a sexual minority person's tendency to avoid acknowledging or indicating their sexual orientation to others. This is measured using the concealment subscale (NOS-C). It consists of five items that ask

participants how often they avoid talking about or otherwise indicating their sexual orientation to people in a given group on a 10-point scale from *never* (1) to *always* (10). The groups of people mentioned in the concealment subscale are the same as those from the disclosure subscale. Higher scores on the concealment subscale indicate more concealment efforts. This measure yielded an internal consistency estimate of .82 in the development study and correlated in a theory consistent manner with relevant constructs, such as internalized heterosexism and sensitivity to sexual orientation related rejection (Meidlinger & Hope, 2014). Additionally, convergent validity was demonstrated via its high negative correlation with Mohr and Fassinger's (2000) Outness Inventory. The internal consistency estimate was .75 in the present study.

**Goals to engage in career exploration activities.** Goals to engage in career exploration activities (exploratory goals) over the next two months were assessed with an expanded version of Betz and Voyten's (1997) measure (Lent et al., 2017). For this measure, participants were asked to indicate their level of agreement with 10 relevant statements (e.g., "I plan to talk to advisors or counselors in my college about career opportunities for different majors") on a 5-point rating scale from *strongly disagree* (1) to *strongly agree* (5). Higher scores reflect stronger exploratory goals. This measure has yielded an internal reliability estimate of $\alpha = .87$ or higher in prior research (Lent et al., 2017) and been found to predict exploratory actions longitudinally (Lent, Morris, et al., 2019). The internal consistency estimate was $\alpha = .82$ for sexual minority students and $\alpha = .82$ for heterosexual students in the present study.

**Career exploration actions.** Prior engagement in career exploration actions (exploratory actions) was assessed with the Career Exploratory Actions Scale (CAS), a

measure with 11 items designed to capture behaviors like those indexed by the career exploratory goals measure (Lent et al., 2014). For the CAS, participants were asked to indicate the extent to which they had engaged in these behaviors (e.g., "…searched the internet to find careers that appeal to you?") on a 5-point rating scale from *little (or not at all)* (1) to *a great deal* (5). Higher scores reflected more engagement in career exploration activities. This measure has yielded adequate internal reliability estimates in prior research (e.g., Lent et al., 2014, 2016) and been found to predict career decidedness longitudinally (Lent, Morris, et al., 2019). The internal consistency estimate was $\alpha = .86$ for sexual minority students and $\alpha = .86$ for heterosexual students in the present study.

**Decisional anxiety.** Career decision-making anxiety was measured with a 3-item version of the choice/commitment anxiety scale derived from the Career Indecision Profile (CIP-65; Hacker et al., 2013; see Lent et al., 2016). For this measure, participants were asked to indicate their agreement with statements related to the inability to commit to a career and the presence of decision-related anxiety (e.g., "I often feel nervous when thinking about having to pick a career") on a 6-point rating scale from *strongly disagree* (1) to *strongly agree* (6). Higher scores reflect more career decision-making anxiety. The 3-item scale has demonstrated adequate internal consistency reliability ($\alpha = .85$ to .87) and correlated negatively with career decision-making self-efficacy (Lent, Morris, et al., 2019). The internal consistency estimate was $\alpha = .82$ for sexual minority students and $\alpha = .84$ for heterosexual students in the present study.

**Career decidedness.** Present level of career decidedness was assessed with a brief measure adapted by Penn and Lent (2018) from two prior measures of career decision status (Hacker et al., 2013; Jones, 1989). For this measure, participants were

asked to indicate their level of decidedness regarding three statements (e.g., "How decided about your overall career direction are you at this point in time?") on a 6-point rating scale, from *completely undecided* (1) to *completely decided* (6). Higher scores reflect more decidedness. The scale has produced internal consistency estimates of $\alpha$ = .71 to $\alpha$ = .84 and been shown to relate to measures of career decision-making self-efficacy and decisional anxiety in prior research (Lent, Morris, et al., 2019; Lent, Wang, et al., 2019). The internal consistency estimate was $\alpha$ = .68 for sexual minority students and $\alpha$ = .77 for heterosexual students in the present study.

**Procedure**

This study used a correlational descriptive design. Data were collected via an online survey that was distributed to registered panels of research participants. Some of the participants came from LGBTQ specific panels while others came from non-identity specific panels. The two subsamples of participants were approximately matched for gender and academic class, with a quota of no more than 65% of participants identifying as women and at minimum 40% of participants being either freshman or sophomores. Though gender and academic class ratios would ideally be equal (e.g., 50% women and 50% men), these looser parameters balanced the desire for a representative sample with cost and feasibility considerations.

When participants indicated their interest to their Qualtrics Panel, they were directed to an eligibility survey (Appendix A). The eligibility criteria for all participants included: being a college student enrolled at a four-year institution in the United States, not attending an online university/college, being at least 18 years old, and not endorsing an academic class other than freshman, sophomore, junior, or senior. Criteria specific to

heterosexual participants included identifying as cisgender and heterosexual, while criteria specific to sexual minority students included identifying as a sexual minority (regardless of whether they were transgender or cisgender). Other demographic information, such as race, geographic region, and academic major was collected as part of the screening survey but was not used as screening criteria. If participants passed screening, they were forwarded to the consent form where they indicated their intention to participate. The consent forms varied slightly for sexual minority and heterosexual participants due to the differences in the surveys' contents. Both versions informed participants of their rights and that they could close their browsers at any time during the study if they did not wish to complete it. Participants indicated their consent by selecting a box indicating "I agree to participate." The sexual minority participant version of the consent form is in Appendix B, while the heterosexual participant version is in Appendix C.

After providing consent, participants were directed to one of two versions of the survey, one for sexual minority participants and the other for heterosexual participants. The two versions contained the same CSM model predictors and outcome measures, but the version intended for heterosexual students (a) did not contain any references to sexual identity in its consent form and (b) did not contain any measures or additional demographic questions related to sexual identity. To ensure that items were not skipped, participants were required to answer all items before progressing to another section of the survey. After completion, the Qualtrics Panel was notified via embedded data and the participants were compensated at the value agreed upon when invited to participate by their panels. All measures are in Appendix D.

## Analyses

The research questions and hypotheses were intended to assess (a) if sexual minority students' career development progress and process differs from those of heterosexual students, (b) if sexual minority college students' career development relates to concurrent psychological and social aspects of sexual identity development, and (c) how psychological and social aspects of sexual identity development may interrupt the career exploration and decision-making process.

**Mean comparisons.** To address Research Question 1, a series of independent sample *t*-tests were conducted to compare differences in sexual minority and heterosexual students' perceptions of career exploration and decision-making self-efficacy, career decision-making supports, career exploration outcome expectations, exploratory goals, exploratory actions, career decision-making anxiety, and career decidedness. Due to the exploratory nature of this analysis, there are no directional hypotheses in Research Question 1.

**Linear regressions.** To address Hypotheses 1–4b, a series of simultaneous entry regression analyses predicting (a) exploratory goals, (b) decisional anxiety, and (c) career decidedness were conducted for both sexual minority and heterosexual students. For the first set of hypotheses (Hypothesis 1 and 2), exploratory goals were simultaneously regressed on the set of social cognitive predictors indicated by the CSM model (self-efficacy, outcome expectations, and social support). For Hypotheses 3a and 3b, decisional anxiety (3a) and career decidedness (3b) were regressed on the set of social cognitive predictors indicated by the CSM model (self-efficacy and social support) using the sexual minority student sample. For Hypotheses 4a and 4b, these analyses were

repeated using the heterosexual student sample. For all of the regressions in this hypothesis set (1–4b), a significant $\Delta R^2$ at step one would suggest that the set of relevant social cognitive variables do explain significant variance in the outcomes that they are predicted to in the CSM model.

**Regression based moderation analyses.** To address whether relationships predicted by the CSM model are moderated by sexual orientation status (Research Question 2), several regressions were conducted using standardized variables and interaction terms. The interaction terms were computed in three steps. First, sexual orientation was defined via the computation of a dummy variable, where 0 = sexual minority and 1 = heterosexual. Second, all relevant predictor variables (self-efficacy, outcome expectations, social support, and sexual orientation) were standardized to minimize potential issues of collinearity. Finally, the interaction terms were computed by multiplying the standardized sexual orientation term with each standardized social cognitive predictor (e.g., social support). The regression analyses were then rerun using the following entry order: (a) sexual orientation and the main effects (social cognitive) terms at step one and (b) the set of interaction terms at step two. There were no directional hypotheses as these were exploratory questions. A significant $\Delta R^2$ at step two would suggest that one or more of the social cognitive variables is differentially useful in predicting the criteria across the subsamples.

**Incremental regression analyses.** To address Hypotheses 5–6b, as well as Research Question 3, a series of two-step hierarchical regression analyses were conducted. These analyses sought to determine the extent to which the sexual identity variables predict unique additional variation in (a) exploratory goals, (b) decisional

anxiety, and (c) career decidedness for sexual minority college students. For Hypothesis 5, exploratory goals were regressed on self-efficacy, outcome expectations, and social support in step one, followed by the sexual identity development variables (identity uncertainty, internalized homonegativity, difficult process, identity disclosure, and identity concealment) in step two. For Hypotheses 6a (decisional anxiety) and 6b (career decidedness), self-efficacy and social support were entered at step one, followed by the set of sexual identity variables at step two. For Hypotheses 5–6b, a significant $\Delta R^2$ at step two would suggest that the set of sexual identity variables explained significant variance above and beyond the core CSM model variables.

Finally, Research Question 3 sought to explore which, if any, of the sexual identity variables would explain unique variance in the three outcome variables (exploratory goals, decisional anxiety, and career decidedness) after controlling for the social cognitive predictors. This research question was addressed by reexamining the hierarchal regressions conducted to address Hypotheses 5–6b. I sought to observe if any of the beta coefficients of the sexual identity development variables (identity uncertainty, internalized homonegativity, difficult process, identity disclosure, and identity concealment) were significant. For Research Question 3, if any of these variables' beta coefficients were significant, it would indicate that the given variable explained unique variance in the corresponding outcome beyond the variance already explained by the social cognitive predictors. Due to the exploratory nature of this research question, there were no hypotheses regarding which variables may explain unique variance.

## Chapter 3: Results

Descriptive statistics for the scale scores are shown in Table 2 for sexual minority participants and in Table 3 for heterosexual participants. The skewness and kurtosis scores suggest that most variables were relatively normally distributed, though two variables were moderately kurtotic (outcome expectations in both samples and exploratory goals in the sexual minority sample). Each of the variables yielded acceptable reliability estimates for both sexual minority ($\alpha$ = .68 to .90) and heterosexual participants ($\alpha$ = .77 to .89). Note that, given the greater weight to be placed on effect size over statistical significance in this study, the results will be reported without adjustments for family-wise error rate. Although $p < .05$ will be used as the general criterion for statistical significance, statistical tests that were significant at the more conservative $p < .01$ and $p < .001$ levels will also be noted in the correlation, mean comparison, and regression tables.

### Bivariate Correlations

Table 4 presents a correlation table including all the variables for both samples (correlations for the sexual minority sample appear below the diagonal). The correlations among the social cognitive variables were largely consistent with the findings of prior studies on the social cognitive CSM model, with significant relationships between nearly all the variables for both heterosexual and sexual minority students. An exception for sexual minority participants was that exploratory actions did not correlate significantly with decisional anxiety. An exception for heterosexual participants was that social support did not correlate with career decision-making anxiety.

The sexual identity development variables of identity uncertainty, internalized homonegativity, difficult process, identity disclosure, and identity concealment yielded theory consistent correlations among themselves. The measures of sexual identity conflict

(identity uncertainty, internalized homonegativity, and difficult process) all correlated positively and moderately with each other ($r$ = .32 to .43) and the measures of identity management (identity disclosure and identity concealment) correlated negatively and moderately ($r$ = -.39). However, most of the correlations between the sexual identity conflict and sexual identity management variables were small ($r < \pm .20$). Two exceptions were that internalized homonegativity ($r$ = .32) and difficult process ($r$ = .43) both correlated positively and moderately with identity concealment.

There were several significant relationships between the social cognitive and sexual identity variables. Social support correlated significantly with all of the sexual identity development variables except for identity uncertainty ($r$ = -.05). The direction of these relationships indicated that more sexual identity conflicts, more concealment, and less disclosure were associated with less social support. Also, identity concealment was associated with all the career self-management variables except for outcome expectations ($r$ = .05) and career decidedness ($r$ = -.08). The direction of the significant correlations suggest that increased concealment is associated with poorer career development progress.

**Mean Comparisons between Sexual Minority and Heterosexual Participants**

Research Question 1 asked whether there might be mean differences among the seven social cognitive variables as a function of sexual identity status. Six of the seven comparisons (all but career decidedness) met the assumption for Levene's test for equality of variances. Thus, equal variances were not assumed in reporting the results for career decidedness. The findings, shown in Table 5, indicated that none of the variables

differed significantly ($p < .05$) between sexual minority and heterosexual participants, and all of the effect sizes, expressed in standard deviation units ($d$), were very small.

**Utility of the Social Cognitive Predictors in the Sexual Minority and Heterosexual Samples**

Hypotheses 1–4b were addressed via a series of simultaneous entry regression analyses predicting career-related exploratory goals, decisional anxiety, and career decidedness. The first set of hypotheses (Hypothesis 1 and 2) maintain that the set of social cognitive predictors (including self-efficacy, outcome expectations, and social support) significantly predict exploratory goals for both sexual minority (see Table 6, step one) and heterosexual students (Table 7). The results of the analyses in which exploratory goals were regressed simultaneously on the three predictors were consistent with the hypotheses in that the variance explained in goals was significant for both sexual minority ($R^2 = .18$, $F$ (3, 221) = 16.42; $p < .001$) and heterosexual participants ($R^2 = .33$, $F$ (3, 283) = 46.51; $p < .001$). However, it is notable that, social support predicted unique variance for heterosexual students ($\beta = .31$, $p < .001$), but not for sexual minority students ($\beta = .01$, $p > .05$).

Hypotheses 3a and 4a maintain that the social cognitive predictors of social support and self-efficacy will collectively account for significant variance in decisional anxiety for both sexual minority and heterosexual students. Hypotheses 3b and 4b make parallel predictions regarding career decidedness. The results were consistent with both sets of hypotheses. In predicting decisional anxiety, $R^2 = .18$ ($F$ (2, 222) = 24.00; $p < .001$) in the sexual minority sample (see Table 8, step one) and $R^2 = .16$ ($F$ (2, 284) = 27.61; $p < .001$) in the heterosexual sample (see Table 9). For career decidedness in the

sexual minority sample (Table 10, step one), $R^2 = .22$, $F$ (2, 222) = 30.87; $p < .001$; in the heterosexual sample (Table 11), $R^2 = .17$, $F$ (2, 284) = 29.00; $p < .001$.

**Sexual Identity Status as a Moderator of Social Cognitive Predictor-Outcome Relations**

Research Question 2 sought to explore whether the hypothesized predictor-criterion relations in the CSM model were moderated by sexual orientation. To examine these possibilities, product terms were computed to represent the interaction of each social cognitive predictor with sexual orientation (as a dummy coded dichotomous variable). The primary regression analyses were then rerun using the following entry order: (a) sexual orientation and the main effects (social cognitive) terms at step one and (b) the set of interaction terms (e.g., sexual orientation x self-efficacy) at step two. A significant change in $R^2$ at step two would suggest that one or more of the social cognitive variables is differentially useful in predicting the criteria across the samples.

As shown in Table 12, the set of interaction terms did account for a small but significant change in $R^2$ in the prediction of exploratory goals, $\Delta R^2 = .02$, $p < .001$. Further inspection revealed one significant interaction term: sexual orientation x social support, $\beta = .16$, $p < .001$. A plot of the interaction (Figure 2) indicates that the relation of social support to goals was somewhat stronger for heterosexual participants than for sexual minority participants, which is consistent with the pattern of differences observed in the separate regressions conducted for sexual minority (Table 6) and heterosexual students (Table 7). The set of interaction terms did not account for additional significant variance in either decisional anxiety (Table 13) or career decidedness (Table 14).

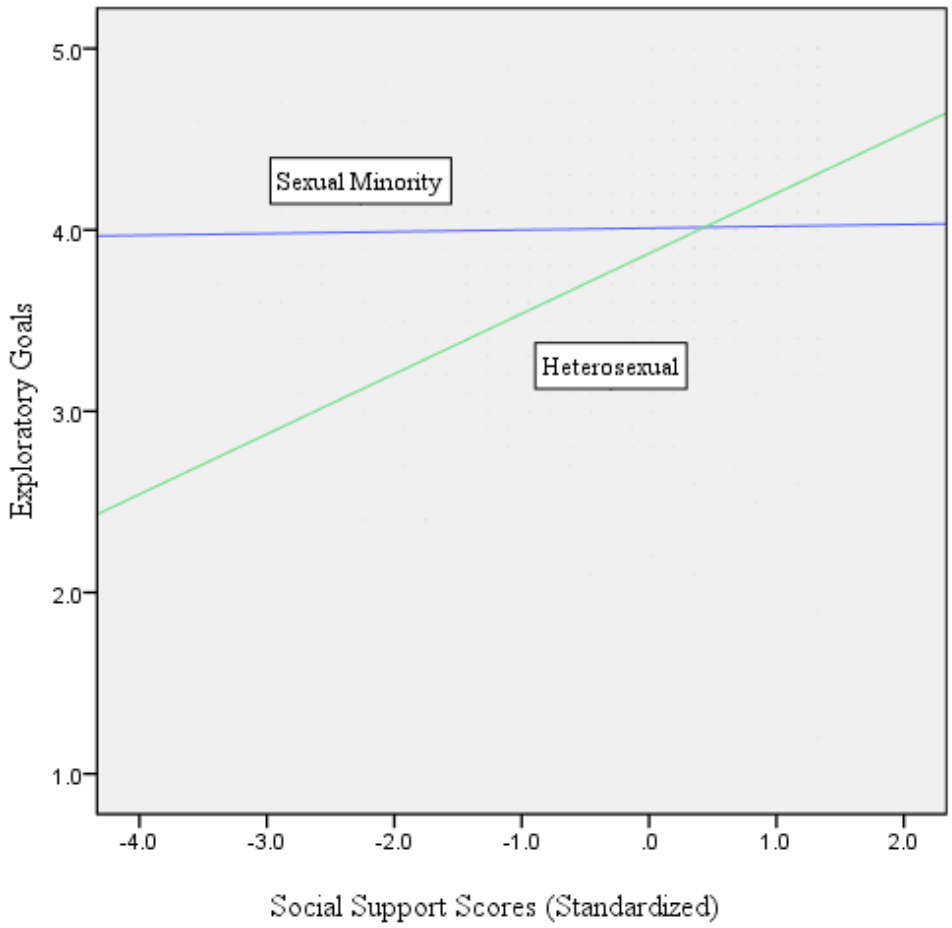


*Figure 2.* A visual representation of the interaction between social support and exploratory goals based on sexual orientation.

**Incremental Predictive Utility of the Social Identity Variables**

Hypotheses 5–6b maintain that the set of sexual identity development variables (identity uncertainty, internalized homonegativity, difficult process, identity disclosure, and identity concealment) will predict significant variance in (a) exploratory goals, (b) decisional anxiety, and (c) career decidedness beyond that accounted for by the social cognitive variables for sexual minority students. These hypotheses were tested with a two-step hierarchical regression procedure in which each outcome variable was regressed

on the appropriate social cognitive predictors in the first step and then the sexual identity variables were added in the second step.

To address Hypothesis 5, exploratory goals were regressed on social support, self-efficacy, and outcome expectations in step one, followed by the sexual identity development variables (internalized homonegativity, identity uncertainty, difficult process, identity disclosure, and identity concealment) in step two. Results showed that the sexual identity variables accounted for an additional 4% of the predictive variance in exploratory goals at step two, $\Delta R^2 = .04$, $\Delta F$ (5, 216) = 2.32; $p < .05$), which is consistent with Hypothesis 5 (see Table 6, step two).

In testing Hypotheses 6a (decisional anxiety) and 6b (career decidedness), social support and self-efficacy were entered at step one, followed by the set of sexual identity variables at step two. Results showed that the sexual identity variables offered a 5% increase in variance explained in decisional anxiety, $\Delta R^2 = .05$, $\Delta F$ (5, 217) = 3.05; $p < .05$ (Table 8, step two). They did not, however, account for unique variance in career decidedness, $\Delta R^2 = .01$, $\Delta F$ (5, 217) = .35; $p > .05$ (Table 10, step two). Thus, the findings offered support for Hypothesis 6a, but not Hypothesis 6b.

Finally, Research Question 3 sought to explore which, if any, individual sexual identity development variables would explain significant unique variance in the three outcome variables after controlling for the social cognitive (CSM) predictors. Two significant findings were observed. First, identity concealment uniquely explained additional variance in exploratory goals such that lower identity concealment was associated with greater intentions to engage in career exploration activities ($\beta = -.15$, $t$ (216) = -2.13, $p < .05$; see Table 6, step two). Second, internalized homonegativity

explained unique variance in decisional anxiety such that more internalized homonegativity predicted less anxiety about one's career decision-making ($\beta$ = -.21, $t$ (217) = -2.97, $p$ < .01; Table 8, step two).

The latter, non-intuitive result appeared to be because of statistical suppression. This explanation is proposed because the bivariate relation of internalized homonegativity to decisional anxiety was not statistically different from 0 ($r$ = -.03), yet it became a significant negative predictor in the presence of the other predictors. Moreover, its addition to the equation was associated with a small but notable increase in the beta weight for social support. At step one, $\beta$ = -.13, $t$ (222) = -1.92, $p$ = .06) and, at step two (with internalized homonegativity in the equation), $\beta$ = -.15, $t$ (217) = -2.21, $p$ < .05.

## Chapter 4: Discussion

This cross-sectional study examined Cheryl Hetherington's (1991) bottleneck hypothesis thirty years after it was conceived because multiple factors bring its relevancy and validity into question. The first is that the bottleneck hypothesis has not been extensively researched. This may be in part because of its imprecision and the resulting lack of clarity about how to operationalize its concepts (e.g., which aspects of career development should be impeded by one's sexual identity development? Is the bottleneck exclusive to college students?). As a result of this imprecision, research on the hypothesis tends to lack consistency in both theoretical grounding and methodology. Most of the studies used samples representing different populations (e.g., high school youth and young adults, LGB college students, young professionals) and differing operationalizations of both sexual identity development and career development (Lyons et al., 2010; Schmidt & Nilsson, 2006; Winderman et al., 2018).

A secondary concern is that the bottleneck hypothesis may have lost its relevancy since being developed. In 1991, being a sexual minority individual carried much greater societal stigma and living openly had much higher personal (and even legal) risks. As such, it would be reasonable to assume that people who were just discovering their sexual orientation may have faced greater psychological distress and motivation to conceal their identity. Now, though anti-LGBTQ stigma is still present, there is greater social acceptance and a stronger cultural recognition of sexual minority individuals (Gallup Inc., 2020; Laughlin, 2016). Therefore, the sexual identity development processes involving self-acceptance and disclosure to others may no longer be as demanding, at least in a Western cultural context. Further, the average age at which sexual minority individuals are coming out appears to be lowering to the point where many individuals

are identifying as sexual minorities and coming out before reaching college (Taylor, 2013) and, therefore, bypass the potential career development bottleneck in college.

Given the concerns listed above, a careful reexamination of the bottleneck hypothesis was warranted, especially given that such research may inform how career counselors serve the sexual minority college students who seek career counseling today. The present study recruited samples of sexual minority ($n$ = 225) and heterosexual ($n$ = 287) students who each completed measures of CSM model predictors and outcome variables. In addition, the sexual minority sample completed measures reflecting both psychological (i.e., sexual identity conflicts) and social (i.e., sexual identity management) aspects of sexual identity development. The data collected from this survey addressed three central questions to evaluate the bottleneck hypothesis's present validity and relevance using an established career development framework.

The first question was, how might the career exploration and decision-making progress and process be different for sexual minority and heterosexual students? This question was asked because it would help explore whether sexual minority students' career decision-making progress is inhibited relative to that of heterosexual students who, presumably, do not need to invest as much energy defining their sexual identity at the same time that they are developing their career path. I addressed this question by using a framework based on the social cognitive model of career self-management (CSM; Lent & Brown, 2013). The CSM model has been empirically supported as a way to model the process by which students manage their career decision-making process (e.g., Lent, Morris, et al., 2019). For assessing potential differences in career development progress, I tested between-group mean differences in key indicators of career exploration and

decision-making progress. For assessing potential differences in career development process, I observed the predictive utility of the core CSM model predictors for key outcomes (career decidedness, career decision-making anxiety, and career exploratory goals) because significant differences would suggest differences in how sexual minority and heterosexual students manage the career exploration process. I used multiple regressions to examine if the basic social cognitive predictors of career decision-making self-efficacy, outcome expectations, and social support exhibit differential predictive utility in sexual minority and heterosexual student samples.

The second and third questions addressed the bottleneck hypothesis's premise that sexual identity development is a unique factor in sexual minority college students' career development. Since sexual identity development is itself an imprecise construct that can be defined in multiple ways, I used an approach that incorporated key psychological sexual identity conflicts (internalized homonegativity, identity uncertainty, and difficult process) and indices of social aspects of sexual identity development (identity disclosure and identity concealment). The second and third central questions asked whether indicators of sexual identity conflict and sexual identity management styles account for unique variance in the career decisional progress of sexual minority students after taking the general social cognitive CSM model predictors into account and, if so, which ones may be most relevant.

Although the current findings need to be interpreted in the context of a major methodological caveat (which will be highlighted later), they may offer a useful perspective on the present viability of the bottleneck hypothesis and suggest a positive frame of reference for the career development of sexual minority college

students. First, I found no evidence that simply identifying as a sexual minority made a significant (statistical or practical) difference in the career decisional process or outcomes of a sample of sexual minority students. Thus, these students are, on average, not "behind" their heterosexual peers in their current career exploration and decision-making. There may be several reasons why they do not display a bottleneck in their career exploration and decision-making. For example, given their average age of coming out (*M* = 15.20), they may have avoided a career bottleneck by dealing with key aspects of sexual identity development during their high school years. It may also be that, while some sexual minority students experience a bottleneck between career exploration and sexual identity development, others may experience facilitative factors that enhance their career exploration as compared to heterosexual students. Finally, the assumption that the two developmental processes (i.e., sexual identity and career exploration) conflict with one another and compete for limited psychological resources may simply be erroneous.

Another optimistic finding was that the same basic set of social cognitive predictors (self-efficacy, outcome expectations, and social support) accounted for significant and substantial amounts of variance in the career-related exploratory goals, decisional anxiety, and career decidedness of both sexual minority and heterosexual students. This suggests that decisional confidence, positive outcome expectations, and social support are generally as relevant to the career decision-making of sexual minority students as they are to students who identify as heterosexual. Thus, a minority-specific theory may not be necessary to explain their decision-making progress or lack thereof.

Despite these points of optimism, several nuanced findings involving sexual identity should be highlighted. First, though sexual minority students did not report mean

level differences from heterosexual students across the set of variables, social support for career decision-making was correlated significantly, though modestly, with several of the sexual identity variables, suggesting that those who were experiencing more conflict about their sexual identity and being less disclosing about their identity were likely to perceive less social support for their decision-making. The reason for these relationships is unclear. However, it may be that sexual minority students rely on many of the same persons for support regarding both their sexual identity and career development. Thus, if they are feeling unsupported in the sexual identity realm or are hesitant to reveal their sexual identity to key others, they may be simultaneously unable to experience a secure base for career exploration.

The second nuanced finding is that the tendency toward concealment was associated with several negative indicators of career progress, such as lower self-efficacy, more decisional anxiety, less prior involvement in career exploration activities, and lesser intentions to pursue them in the future. Again, these relationships were small, though statistically significant. Third, as a set, the sexual identity variables did explain unique predictive variance in exploratory goals and decisional anxiety. Concealment tendencies were associated with less intent to engage in career exploration after controlling for the social cognitive predictors. In addition, it was found that, among the social cognitive variables, only social support interacted with sexual identity in predicting exploratory goals, with social support relating to exploratory goals only in heterosexual students.

**Implications for Career Counseling**

While the patterns observed need to be replicated in future research before too much is made of them, they do tend to implicate social support and concealment

tendencies as possibly being key variables within the context of sexual minority individuals' career development. For example, it is possible that, where sexual minority students are having difficulty in negotiating career decision-making, they may specifically be having difficulty accessing (or may be relying less on) social support for their career decision-making. It may also be the case that the sexual minority identity development process itself makes less of a difference to career decision-making than does one's general tendency to conceal their sexual identity or the environmental factors which may contribute to the decision to conceal, such as a negative campus climate. If this is so, it may suggest an important mechanism through which being a sexual minority may impede career development.

Given these tentative conclusions, two potential implications for future practice will be offered. First, it may be helpful for college career practitioners to recognize that the students with the most sexual identity development challenges may also be the most in need of career support. One avenue for addressing this concern may be to connect sexual minority students with sexual minority faculty/staff or student mentors. However, such an approach may only be viable for students who are relatively open about their sexual orientation. Considerable ingenuity may be needed to assist students whose concealment makes it difficult for them to ask for support either with sexual identity or career development needs. One option may be to train peer sexual minority "coping models" (cf. Bandura, 1997) to mentor their peers and support their well-being. Such an approach may be able to reach students who are unwilling to disclose their sexual identity to professionals.

Second, when working with sexual minority students, identity concealment may reflect the crux of a career development bottleneck. It may be helpful for practitioners to explore reasons that a student may wish to avoid acknowledging their sexual orientation and to reflect on how this might impact the career development process. For instance, concealment motivation may be but one facet of generalized self-shame. Indeed, experiencing the motivation to conceal ones' sexual identity has been associated with endorsing lower interpersonal self-esteem, increased depression symptoms, and a generalized tendency to conceal important information about themselves (Mohr & Kendra, 2011). This, in turn, may inhibit a desire to participate in socially vulnerable career exploration activities (such as attending a career fair). Additionally, given that the decision to conceal one's sexual orientation may also reflect negative environmental factors, it would be important to explore with the student whether any such factors are present. Such external factors that may impact the career development process include experienced or feared discrimination (Schmidt et al., 2011; Schneider & Dimito, 2010).

Finally, following the positive psychology framework suggested by these results, practitioners may wish to approach sexual minority career clients with a strengths-based mindset, focusing, for example, on the strengths that sexual minority college students have in their community relationships, their authenticity, and their capacity to think creatively about their career options. Indeed, prior research has suggested that sexual minority college students who are self-aware of their strengths and weaknesses may have greater career decision-making self-efficacy (Russon & Schmidt, 2014) and may consider career paths they may not have otherwise considered (Schneider & Dimito, 2010). The present results suggest this possibility given that, despite the known barriers sexual

minority college students face, they are, on the whole, making similar progress in their career development as compared with their heterosexual peers.

**Limitations**

The six most notable limitations of this study include the recruitment strategy, operationalization of the predictor variables, statistical power, cross-sectional design, choice of analyses, and limited consideration of within-group heterogeneity.

First, recruitment has often been a challenge with sexual minority populations. This was not the case for the present study because I recruited using LGBTQ specific research panels. However, the tradeoff is that those invited to participate needed to self-identify as LGBTQ to be eligible. Thus, people who are in early stages of questioning their orientation or are highly concealing of their sexual orientation would not have had the opportunity, or possibly even the desire, to participate. Thus, the findings may not be generalizable to those students. Practically speaking, this limitation may mean that one of the core findings of this study – that sexual minority students do not differ significantly from heterosexual students on key career exploration and decisional variables – may only apply to students who are mostly certain about their sexual identity. Indeed, 88% of the current sexual minority sample endorsed being sure of their status as a sexual minority individual and 89% endorsed having come out to at least one close friend or family member.

Second, while the career development variables and their hypothesized relationships were based on an empirically validated social cognitive framework, the sexual identity development variables were not based on a specific theory. Instead, they were chosen to tap relevant constructs from Hetherington's (1991) conceptualization,

without relying on stage-based models of sexual identity development. Following the initial premise of the model Hetherington used, along with related models (e.g., Milton & McDonald, 1984), I sought to choose constructs capturing both the psychological and social aspects of sexual identity development. However, one variable category I omitted was the positive aspects of holding a sexual minority identity, such as identity pride and identity-specific authenticity. These variables have been captured in recent measures of sexual identity (e.g., LGB-Positive Identity Measure; Riggle et al., 2014).

It is reasonable to suspect that low levels of sexual identity conflict may correlate inversely with positive aspects of sexual identity development; for example, more identity pride would reasonably be associated with less internalized homonegativity. Yet the absence of a negative trait is not necessarily the *equivalent* of a positive one (e.g., it is possible for a sexual minority person to be unconflicted about their sexual identity without being actively proud of it). Therefore, inclusion of sexual identity affirmative variables in future research may suggest ways in which sexual minority group members successfully navigate career development tasks in the face of identity specific hurdles (e.g., fear of discrimination).

Third, this study included over 100 statistical tests, a majority of which were the bivariate correlations for each subgroup. Thus, with a $p < .05$ criteria for significance, there would be approximately five significant results anticipated from chance alone. A typical protocol to address this problem is to perform a Bonferroni correction. This protocol was not chosen because of its impact on statistical power and because effect sizes were deemed more pertinent than significance testing to the study's findings. Nevertheless, there is the possibility that certain findings were statistically significant due

to chance. Readers may, therefore, wish to consider more conservative significance levels (e.g., $p < .001$) when interpreting the statistical tests.

Fourth, the current study sought to explore sexual identity development's relationship with career development via the social cognitive model of career self-management (Lent & Brown, 2013). However, the CSM model is intended to be mediational such that present attitudes (e.g., self-efficacy) are posited to predict *future* outcomes (e.g., career decidedness), both directly and via intermediate variables (e.g., exploratory actions). Given logistical limitations, a longitudinal design was not feasible. However, the cost of a cross-sectional design was that the predictive relationships in the CSM model were only observed in the present. For instance, the results of the regression analyses suggest that *present* identity disclosure is not a meaningful predictor of any of the *current* outcomes. However, our study did not directly address the CSM models' hypothesized relationship that *present* identity disclosure may predict *future* outcomes, either directly or via intermediate variables such as exploratory goals or actions. In other words, the cross-sectional design prevents any assessment of the potential temporal relationships between the sexual identity and career development variables.

Fifth, the hierarchal regression strategy I used may have obscured the theoretical mechanisms through which sexual identity link to the CSM predictors. That is, I simply examined whether sexual identity development variables account for unique predictive variance *beyond* the variance explained by the core CSM predictors. This approach is not sufficiently precise to reveal particular pathways that may mediate links from sexual identity development to decisional outcomes. For instance, it is possible that a person who endorses high concealment may not feel confident to explore all career paths due to

fears of how they may be perceived, which could then predict decisional anxiety. To explore these possibilities further, a future study could hypothesize and observe potential path relationships between these variables.

Finally, the sexual minority community is a diverse community, comprised of people of various sexual identities, as well as other social identities (e.g., race, socio-economic status). In this study, these nuances were not addressed, and it is possible that the relationships found when aggregating the data may not accurately represent the experience of particular subgroups, including those with intersecting marginalized identities (e.g., people of color, transgender people). Indeed, the present sexual minority sample was largely comprised of people identifying as White/European American (55.6%), cisgender (91.6%), and bisexual (64.0%). Given that polysexual (i.e., being attracted to more than one gender) sexual minority people may have differing challenges from monosexual (i.e., being attracted to one gender) sexual minority people, having such a predominantly bisexual sample may have impacted the results.

Relatedly, this study was conducted in the United States, a society where LGBTQ acceptance is largely improving. In many other places, LGBTQ rights are still extremely limited and the psychological and social challenges in accepting oneself as a sexual minority may be much higher. Thus, it may be premature to generalize these findings to contexts where sexual identity disclosure is more perilous. In such contexts, it is possible that the sexual identity/career bottleneck will be more pronounced due to the need for self-protection.

**Future Directions**

In conjunction with prior research, the current findings suggest that there may not be substantial differences between sexual minority and heterosexual college students' career decisional progress, at least among sexual minority students who are relatively sure of their identity and out about their sexual orientation to important others. However, the findings also suggest that those who conceal their sexual identity may be less likely to experience social support for their career decision-making and be less inclined to engage in career exploration activities that can facilitate career decision-making. To ensure that they are not merely due to methodological confounds (e.g., the internet sampling strategies used), these findings should be replicated and extended to different samples of sexual minority students who vary in their degree of public concealment or disclosure.

It may also be useful to conduct research exploring younger sexual minority students' career development because of the bottleneck hypothesis's core premise that difficulties arise during concurrent career and sexual identity development. In the current sample, only 12% of the sexual minority participants endorsed currently "questioning whether they are heterosexual or LGBQ" and only 11% indicated they had not disclosed their sexual orientation to "a close friend or family member." Additionally, for the 88% of sexual minority participants who were sure of their status as a sexual minority person, the mean age of coming to this realization was approximately 15 years old. Thus, the sample largely consisted of people who had already spent several years questioning their sexual orientation and/or had come out to a close friend or family member. The challenge with this sample's composition is that the bottleneck hypothesis may not have been fully observed because these students largely had already developed their sexual identity either before entering college or near the beginning of their college experience. Therefore, with

the assumption that this research is being conducted with collegiate samples, either recruiting the youngest eligible students (i.e., first-time college freshmen) or specifically targeting students who may be earlier in their sexual identity development may provide a better opportunity to observe an interaction between early sexual identity development and career development.

An additional research direction could be to explore within-group factors that may affect sexual minority students' career development progress. For example, cluster analysis could be used to explore the characteristics of sexual minority students who negotiate career decision-making more and less well. Using this approach, one might search for differences in naturally occurring subgroups and more precisely determine which sexual minority students may have the most success (or challenges) in their career development. Indeed, if sexual minority college students face some challenges their heterosexual peers do not, such as heterosexist harassment, yet make similar progress in their career development, it may be that some sexual minority students may be *advantaged* as compared to their heterosexual peers due to resiliency factors. Thus, intragroup exploration is especially warranted.

Finally, as mentioned in the limitations section, this study's design could benefit from several methodological adjustments. Two such possibilities will be described. First, researchers could design a longitudinal version of this study, with all the variables in the current study being measured at multiple time points throughout an academic year. Such an approach has been taken in the past to improve upon cross-sectional studies of social cognitive models (e.g., Lent et al., 2016 and Lent, Morris, et al., 2019). Second, the current study's design could be improved by increasing the sample size to attain greater

statistical power, restricting the sample to younger college students, adding variables reflecting positive aspects of sexual identity development, or some combination of these suggestions. Such design changes may help to increase the field's understanding of sexual minority college students' career development, leading to improved interventions intended to support these students' career progress.

**Summary**

This study reexamined the bottleneck hypothesis which maintains that sexual minority students in the midst of their early sexual identity development experience a fraught career development process. It also examined the relation of indicators of sexual identity development with career exploration and decision-making. The findings suggest that, at least in a sample of predominantly "out" sexual minority college students, sexual minority college students' perceptions of their career progress appear comparable to those of heterosexual college students. This is an encouraging result because it suggests that sexual minority students, despite challenges they may face, may be relatively resilient in navigating career decision-making. The findings also suggest that concealment has the greatest association with career development challenges (e.g., lesser career decision-making social support and exploratory goals). Though this result is tentative, it may suggest the value of exploring, in counseling, the reasons that a client may hide their sexual orientation from significant others, along with ways they can tap alternative sources of support for their career decision-making. Finally, the present results cannot be used to confirm the null hypothesis but they do offer a note of optimism that sexual identity development may not be the categorical bottleneck to career development that it was once assumed to be.

## Chapter 5: Extended Literature Review

Sexual minority status has been defined in various ways in psychological research (e.g., behaviorally, via self-identification) and after decades of research, there is still no definitive consensus (Salomaa & Matsick, 2019). However, in the absence of behavioral considerations, it may be broadly defined by self-identification with non-heterosexuality. That is, sexual minority individuals are people who have a sexual orientation other than heterosexual. Common examples of sexual minority individuals include gay men, lesbian women, bisexual people, and queer people. However, many more identities are included under the sexual minority label including asexual and pansexual. The common factor of these identities is a departure from the assumed heterosexuality of exclusively being sexually attracted to the "opposite gender."

Sexual minority individuals may have unique career experiences, such as differing career choices, discrimination in the job application process, and perceptions of a "lavender ceiling" (Ragins & Cornwell, 2001; Tilcsik, 2011; Tilcsik et al., 2015). They may also encounter distinctive career barriers, such as a lack of domestic partnership benefits, difficulty with partner and work-related social functions, coming out issues, negative attitudes of coworkers or clients, job discrimination, internalized homophobia, and a perceived need to compensate for the negative views of others (Parnell et al., 2012). These experiences may contribute to the decreased economic security of sexual minority individuals, as well as the need for them to make self-preserving, but vocationally adverse, choices such as avoiding co-workers, staying home from work, or quitting their jobs (Fridas & Cooper, 2018).

Though still a statistical minority, some research suggests that non-heterosexual persons constitute a substantially larger proportion of their generational cohort than sexual minority persons from previous generations (e.g., Laughlin, 2016; YouGov, 2015). For instance, in a 2017 study on attitudes regarding various social issues, only 73% of men and 59% of women aged 16–22 reported being "exclusively attracted to the opposite gender" (Duffy et al., 2018). Evidence suggests that sexual minority college students may also have multiple unique challenges, including heterosexist harassment (Morris & Lent, 2019; Rankin et al., 2010), and a higher incidence of normative challenges, such as increased academic difficulties and mental health issues (Crawford & Ridner, 2018; Klein & Dudley, 2014; Oswalt & Wyatt, 2011).

Sexual minority college students also appear to have unique vocational considerations. For instance, Schneider and Dimito (2010) found that sexual minority students frequently endorsed that their status as a sexual minority individual influenced their career development, both positively and negatively. Notably, 52% of the students believed their sexual orientation "opened up the possibility of careers that they probably would not have considered if they were heterosexual," while 33% felt that their sexual orientation "narrowed the career options available to them," suggesting that the valence of the perceived influence that one's sexual identity has on their vocational development may vary from student to student. Additionally, the authors found differences within sexual minority subgroups, with lesbians being significantly most likely and gay men least likely to endorse having their career options opened due to their orientation.

One theory about the effect of sexual minority identity on career development is Cheryl Hetherington's (1991) hypothesis of a "bottleneck effect" (referred to as the

bottleneck hypothesis). Though Hetherington's position was more of a clinically informed observation within a book chapter on lesbian and gay college students' career development than a fully developed theory, it has been cited repeatedly in career development texts either by name (e.g., Prince, 2013) or description (e.g., Patton & McMahon, 2014). The core premise of the bottleneck effect is that sexual minority college students experience high levels of sexual identity development – defined as the process of recognizing non-heterosexuality, finding a label for oneself, disclosing one's identity, becoming involved in the sexual minority community, and integrating sexual orientation into a broader image of self (Levine & Evans, 1991) – and that, during this process, it may be difficult to engage in career development.

Hetherington argued the reason for the bottleneck in career development was that the sexual identity development process may be difficult because negative emotions such as identity confusion (i.e., uncertainty) and internalized homonegativity may be facets of sexual identity development for sexual minority individuals (Mohr & Fassinger, 2000; Mohr & Kendra, 2011). Due to limited emotional resources and the emotionally demanding nature of sexual identity development, Hetherington posited that career development may be put "on hold" while salient sexual identity development processes are unfolding (e.g., acceptance of oneself, exploring attractions, and coming out). Thus, there is a developmental bottleneck in which the student is focusing on their sexual identity development instead of their career development. Further, she posited that the bottleneck would cease once the student successfully integrated their sexual identity.

Hetherington (1991) further defined which challenges may arise at differing "stages" of identity development. In the stage of self-awareness, individuals may struggle

in their career development because they are potentially "putting other parts of life on hold" due to the stress that coming to terms with their sexual orientation and adjusting their friend groups may entail. Additionally, they may be unwilling to disclose their sexual orientation to career/academic counselors, creating barriers to getting appropriate assistance in career exploration. In the stage of self-labeling, students may struggle with misperceptions about what careers are available or appropriate for them, based on stereotypes regarding what careers lesbian and gay identified individuals may pursue. In this stage, Hetherington notes that role models may be especially helpful. In the stage of community involvement and disclosure, students may be focused on their new lesbian and gay friend groups and may not want to work on career decisions. Finally, in the stage of identity integration, Hetherington posits that the individual is ready to work on integrating their lesbian/gay identity with their vocational development and may no longer face a bottleneck.

The bottleneck hypothesis is intuitively appealing and has generated a small body of generally supportive findings. However, it was proposed during a period when more sexual minority individuals were first coming out during college and the general public's attitudes toward sexual minorities was far more critical (Gallup Inc., 2020; Taylor, 2013). Thus, an updated reexamination of its validity is warranted. To provide further context that has informed the objectives and design of this study, a general summary of the sexual identity development and career development theories that informed the bottleneck hypothesis is offered below. Then, a critical review of the bottleneck hypothesis, some notable tests of its tenets, and its potential limitations will be examined. Finally, this review will explore how Lent and Brown's (2013) social cognitive model of career self-

management (CSM model) can be applied to explore the relevancy of the bottleneck hypothesis 30 years after its conception.

**Sexual Identity Development**

A core premise of the bottleneck hypothesis is that sexual minority college students' vocational development is tied to their sexual identity development. This construct, sexual identity development, has itself been the subject of multiple theories and defined in various ways throughout the later part of the 20th century. Even now, our understanding of sexual minority individuals' sexual identity development is expanding via ongoing research and social understanding of LGBTQ identities (e.g., Diamond, 2008; Ott et al., 2011). Still, as will be explored below, most scholars have identified that sexual identity development encompasses (a) psychological factors, such as self-awareness and acceptance of one's sexual orientation and (b) social factors (such as sexual identity disclosure and concealment) related to navigating the world as a sexual minority person.

The sexual identity development stages described in Hetherington's (1991) explanation of the bottleneck hypothesis were a conglomeration of stages common to then prominent sexual identity development models. These stages included (a) self-awareness, the process of recognizing one's non-heterosexuality, (b) self-labeling, the process of identifying oneself as a sexual minority individual, (c) community involvement and disclosure, which is the process of immersing oneself in the LGBTQ community and disclosing one's sexual identity, and (d) identity integration, the integration of one's sexual identity within the larger self-concept.

Though these stages were not proposed as a novel model of identity development, they were informed by several prominent theories that arose after homosexuality was removed as a mental disorder from the American Psychiatric Association's Diagnostic and Statistical Manual (DSM) in 1973. Before this time, sexual minority individuals were frequently pathologized and the development of their identities was considered disordered or arrested as compared the "default" of heterosexuality. For instance, a prominent 1950's psychiatrist, Benjamin Karpman (1951, p. 186), described sexual minority people as paraphiliacs who, like other paraphiliacs, "[have] not matured sexually, having failed to integrate [their] sexual needs and activities in such a way as to accord with socially accepted modes of sexual expression." Given the bias inherent in these prior conceptualizations, many researchers sought to create normative models of sexual minority individuals' unique development and the resultant models reflected this objective (Levine & Evans, 1991).

Levine and Evans (1991) maintained that a majority of sexual identity development models fell into one of two loose categories: social models, meaning the external expression of one's sexual identity was the primary focus, and psychological models, meaning the internal acceptance of one's sexual identity was the primary focus. The social models included Lee's (1977) and Coleman's (1982) models of sexual identity development. In Lee's (1977) model, the focus is on a three-stage progression of coming out at various levels. First, sexual minority individuals "come out" to themselves, then they come out selectively and explore gay culture, and then finally they come out to broader society. Coleman's (1982) model is slightly more nuanced, with "pre-coming out" as an initial stage, coming out as a secondary stage, and then three more stages

(exploration, first relationships, and integration) that successively expand upon the degree to which one has come out and embraced their identity. An obvious limitation to these approaches is that one's development and growth as a sexual minority individual is tied squarely to their level of disclosure, which may discount the individual's attitudes and emotional integration of their identity. For instance, in Lee's (1977) model, a person may be considered to have a strongly developed sexual identity even if they are self-loathing and distressed regarding their identity – so long as they are "out."

The psychological models mentioned were Plummer's (1975), Troiden's (1979), and Milton and McDonalds' (1984) models of sexual identity development. These models largely emphasized the movement from a negative or ego-dystonic view of one's sexual identity, marked by the desire to reject one's sexual identity, to a more positive, integrated view of ones' sexual identity such that their sexual minority identity is a valued part of the self. These models gave much greater consideration to the emotional journey that one may go through to accept the self. However, though these models did not emphasize disclosure of one's sexual identity, coming out was often a penultimate stage before full integration is reached. Therefore, even these models tend to suggest that to have an integrated identity one must be "out."

Levine and Evans (1991) labeled the Cass identity model (1979) as "psychosocial" due to its relatively balanced and integrated emphasis on both psychological and social aspects of sexual identity development. This model proposed six stages: identity confusion, identity comparison, identity tolerance, identity acceptance, identity pride, and identity integration. Throughout these stages there are concurrent psychological and social objectives that are to be accomplished before "moving on" to

the next stage. For instance, identity pride is marked by a simultaneous valuation and hyper focus on oneself as a sexual minority along with anger or isolation from heterosexual people. The advantage to this approach is that due consideration is given to both psychological and social aspects of sexual identity development. However, the disadvantage is that the stages "tie" conceptually independent processes that may not actually occur for a given person. For instance, in the penultimate stage of identity pride, an increased self-esteem regarding one's sexual identity (psychological) is expected to co-occur with distancing oneself from heterosexuals (social). However, these processes are independent in that a person may have increased self-esteem without a desire to distance themselves from heterosexuals. Thus, a more flexible approach that gives due consideration to both psychological and social processes, without conflating them, may be beneficial to future research.

Using Levine and Evans' (1991) theoretical classification, it seems that their aggregate model is also psychosocial in that awareness, self-labeling, and integration stages reflect psychological processes while the community involvement and disclosure stage reflects a more social process that is penultimate to a final integration of identity. In this sense, the Levine and Evans' (1991) aggregate model most closely resembles the psychological models put forth in their review (e.g., Milton & McDonald, 1984). Thus, in considering how Hetherington (1991) conceptualized the bottleneck, it may be best to consider psychological processes as the primary sexual identity development markers, with social processes as secondary development markers.

**Career Development**

Career development may be broadly defined and, like sexual identity development, has been modeled in various ways throughout the later 20th century and into the 21st century (e.g., Savickas, 2005; Super, 1990). Although Hetherington's (1991) discussion of a developmental bottleneck does not refer to a specific career development framework, she did cite several examples of how career development may be interrupted, which fall into two broad categories. The first is that students may be either too stressed or distracted to focus on career development. The second is that students may have difficulties engaging in normative career development activities, such as seeking social support in career exploration and identifying suitable career options. Both categories suggest that the bottleneck may function as a disruption of normative processes rather than as an additive barrier, such as identity-based discrimination. Therefore, an appropriate career development framework for studying the bottleneck hypothesis is one which identifies intermediate career development activities that may be disrupted, in addition to key outcomes and person inputs.

**Empirical Support for the Bottleneck Hypothesis**

There is some empirical support for the bottleneck hypothesis. Tomlinson and Fassinger (2003) conducted a study of the relationships between lesbian college students' sexual identity development, career development, and campus climate. They did so partially to expand upon a qualitative study in which most participants endorsed having experienced "interruptions" in their career due to coming out (Boatwright et al., 1996). They used the Lesbian Identity Questionnaire (Fassinger, 1998), which contained subscales that corresponded to four stages of individual identity development (awareness, exploration, deepening/commitment, and internalization/synthesis) per Fassinger's model

of sexual identity development (McCarn & Fassinger, 1996). Though these stages are slightly different than those described by Hetherington (1991), they appear to have overlapping meaning. For example, internalization/synthesis can be viewed as analogous to identity integration. Tomlinson and Fassinger's study included the outcome variables of vocational purpose, measured using the Iowa Vocational Purpose Scale (Hood & Zerwas, 1997) and psychological vocational development, a composite measure produced by the authors to assess career decidedness/comfort with career choice.

Tomlinson and Fassinger (2003) found that individual and group internalization/synthesis scores correlated positively with both vocational purpose and psychological vocational development. However, no significant relationships were found for individual and group scores for any other stages. Further, in a hierarchal regression, no measures significantly predicted either outcome. Instead, general campus climate was the strongest predictor for both vocational purpose and psychological vocational development. Participants' perceptions of career issues due to their sexual identity were also assessed, with questions asking participants the degree to which they agree with the statements (a) "I feel a bit 'behind' in my career planning because of all the time I have invested in exploring my sexuality (e.g., relationships, community)"; (b) "My family is less a source of support for me in my career planning than before I began considering a gay/lesbian lifestyle"; (c) "I feel discouraged because many of my heterosexual peers in college seem to be ahead of me in their career planning"; (d) "I have changed my career goals or am considering changing my career goals because of issues related to my sexual orientation."

Tomlinson and Fassinger (2003) found that many participants endorsed these issues at least "slightly," with 40% of participants reporting feeling behind, 40% feeling unsupported by family members, 27% feeling discouraged, and 36% changing or considering changing their careers. Taken together, Tomlinson and Fassinger's results suggested that a substantial portion of sexual minority individuals endorse sexual identity and career development conflicts, but that assessing them via measures of the individual's sexual identity development "stage" may be ineffective.

Schmidt and Nilsson (2006) used a different approach to assess simultaneous sexual identity and career development processes. Instead of measuring participants' stage of sexual identity development, they chose to focus on the psychological "conflicts" that tend to be present in its early stages, namely identity confusion (being unsure of one's sexual orientation), internalized homonegativity (self-contempt for not being heterosexual), and perceptions of their sexual identity development as being a difficult process. Schmidt and Nilsson (2006) used a composite measure of the identity confusion, internalized homonegativity, and difficult process subscales of Mohr and Fassinger's (2000) Lesbian and Gay Identity Scale (LGIS) to predict the career development outcomes of career indecision and career maturity, defined as the feelings, subjective reactions, and dispositions that an individual has toward making a career choice and entering the world of work.

The authors found that their "sexual identity conflict" measure correlated negatively with career maturity ($r$ = -.30) and career indecision ($r$ = .21). In a hierarchal regression, it predicted 9% of the variance in career maturity and 4% of variance in career indecision. Taken together, it appears that sexual identity conflicts associated with early

sexual identity development modestly predict career-related outcomes. However, it should be noted that Schmidt and Nilsson used a convenience sample of LGBTQ youth (ages 15–19), all of whom were either middle schoolers, high schoolers, or individuals who had dropped out of secondary school within the last six months. Thus, the degree to which their findings generalize to college students is unclear.

Lyons and colleagues (2010) conceptualized sexual identity development and its potential conflict with career development in terms of identity development "interference." Specifically, they surveyed participants using two self-constructed scales. The first scale measured participants' endorsement of career development as being more important than sexual identity development, with items such as, "Establishing my career plans has meant that I have little time to think about my gay/lesbian/bisexual identity." The second measured participants' endorsement of sexual identity development as being more important than career development, with items such as, "I've put selecting a career on hold (for example, not really thinking much about my future career) while I develop as a gay, lesbian or bisexual person." The authors then used cluster analyses to form three groups of participants (sexual identity prioritizers, career prioritizers, and low interference) and compared markers of their career development through a social cognitive framework.

Lyons and colleagues (2010) found that individuals who had low interference perceived significantly greater career decision-making self-efficacy and career supports than either prioritizing group. Additionally, sexual identity prioritizers perceived significantly more identity related career barriers than career prioritizers. However, no significant differences were found for career decidedness, career decision-making

interests, or career decision-making outcome expectations. Taken together, Lyons et al.'s (2010) findings suggest that self-endorsed identity conflicts may be associated with differences in career decision-making self-efficacy and perceptions of environmental supports and barriers. However, these differences may not extend to concrete outcomes such as decidedness. One consideration with this result is that the sample consisted partially of college students and post-collegiate employees, as 42.5% of the sample already had their 4-year college degree. Thus, a significant portion of the sample may already have chosen their careers, reducing the variance in decidedness.

Finally, there have been more recent efforts to explore sexual minority college students' career development in the context of supports and barriers. Some of these projects used predictors that may be of relevance to the bottleneck hypothesis. For instance, Russon and Schmidt (2014) investigated the role of authenticity in predicting sexual minority college students' career decision-making self-efficacy. While general authenticity is not a direct indicator of sexual identity development, being honest with oneself regarding sexual identity is an inherent part of developing as a sexual minority individual. The authors of this study used a multidimensional measure of authenticity (Authenticity Inventory Version 3; Kernis & Goldman, 2006) to predict career decision-making self-efficacy. They found that the self-awareness (e.g., "For better or for worse I am aware of who I truly am") and unbiased processing (e.g., "I am very uncomfortable objectively considering my limitations and shortcomings [Reverse Scored]") subscales were the significant predictors career decision-making self-efficacy in a full model regression (total $R^2$ = .22; Russon & Schmidt, 2014). However, the other subscales, authenticity in behavior and relations with others, were not significant predictors.

Interestingly, while self-awareness was a positive predictor, unbiased processing negatively predicted career decision-making self-efficacy. The authors suggested that the positive relation of self-awareness to self-efficacy may because, "…when the self is seen as secure and stable, LGB individuals may be more able to effectively manage discrimination and heterosexist messages to focus their psychological resources on career development tasks (Russon & Schmidt, 2014, p. 216–217)." Meanwhile, they hypothesized that unbiased processing may negatively predict career decision-making self-efficacy because, "when an LGB person does have a clear, unbiased way of understanding his or her surroundings, the task of finding career domains that fit with the self and are nondiscriminatory seems daunting." Taken together, these results suggest that self-awareness, which is the component of authenticity most directly related to sexual identity development, is a positive indicator of career development, while unbiased processing, which is more generalized, may have a more complex role in predicting career development (Russon & Schmidt, 2014).

Another recent study by Winderman and colleagues (2018) investigated the role of sexual minority stressors, sexual minority supports, and community affiliation in predicting four subdomains of career indecision (choice/commitment anxiety, neuroticism/negative affect, lack of readiness, and interpersonal conflict) in sexual minority college students. Two of the minority stressors, identity concealment and internalized homonegativity, conceptually overlapped with social and psychological aspects of most sexual identity development models. Analyses showed that, while social support significantly predicted less interpersonal conflict related to career decision-making, neither of the minority stress variables did. Interestingly, two predictors

interacted such that students showing high community affiliation and low internalized homonegativity reported the highest interpersonal conflict related to their career development. The authors hypothesized that this surprising result may suggest that those who are confident in their identity and involved in the LGBTQ community may have more gender non-conforming career interests which may in turn conflict with expectations of society or their family of origin.

### Modern Limitations and Further Considerations

Despite the modest support for conflicting developmental processes as barriers to career development, the current validity and utility of the bottleneck hypothesis is uncertain for several reasons. These fall into three broad categories:

**Temporal considerations.** An underlying assumption of the bottleneck hypothesis is that sexual minority students are dealing with a difficult sexual identity development process. However, it is unclear whether this underlying assumption is true. Indeed, many of the factors that contribute to sexual minorities having more difficult sexual identity development, such as stigma, may be less salient presently. For instance, in a 1992 Gallup poll, only 48% of U.S. adults believed that lesbian and gay relations should be legal. In 2020, that percentage was 72% (Gallup Inc., 2020).

A second temporal consideration is that sexual minority students may, on average, begin the sexual identity development process before they enter college. For instance, in a 2013 Pew Research Survey, the median age of initial sexual identity disclosure was 17 for respondents who were 18–29 at the time of the survey. However, for respondents who were 50 or older, the median age of first disclosure was 21 (Taylor, 2013). If it is the case that sexual minority individuals are, on average, coming out and developing their sexual

identity before their collegiate years, then it is likely that they may experience relatively less conflict with their career development during college. In this case, the bottleneck would be resolved before it could interfere with collegiate career development.

Given these considerations, the bottleneck hypothesis may no longer be valid because the factors that complicated sexual minority individuals' sexual identity development, that is the relatively arduous and delayed nature of it, have diminished over time. However, this assertion may be most descriptive of the industrialized, western cultural context. Sadly, in many places around the world, the persecution of sexual minority people and, in turn, sexual minority peoples' incentive to remain closeted and/or self-denying is still very high. Thus, when discussing the potential changes in the relevance of the bottleneck hypothesis, it is important to consider the cultural context in which a sexual minority person lives.

**Defining sexual identity development.** The bottleneck hypothesis was proposed at a time when sexual identity development models with discrete stages flourished. Though Levine and Evans (1991) recognized that individuals' development often did not follow a linear stage trajectory, this approach was still the basis of Hetherington's (1991) hypothesis. The stage notion may be considered as an outdated or overly simplistic approach for several reasons. First, many sexual minority individuals may consider their sexual identity to be fluid. Indeed, in a recent study of sexual minority young adults (18–26), approximately 34% of male participants and 48% of female participants reported feeling that their sexual identity was fluid (Katz-Wise & Hyde, 2015). Longitudinal research has supported such notions of fluidity. For example, Diamond (2008) conducted a 10-year longitudinal study of sexual minority women and found that over the course of

the study, approximately two-thirds of the participants had shifted their sexual identity label at least once and approximately one-third had shifted their identity at least twice.

A second consideration is that disclosure of sexual identity can be more complex than simply disclosing non-heterosexuality. For example, Mohr and colleagues (2017) found that bisexual men and women publicly identified as a sexual minority broadly at a higher rate than identifying as bisexual specifically, possibly due to fears of biphobia within the sexual minority community. Finally, many sexual minority individuals may not subscribe to traditional notions about naming and labeling sexual identity, making it difficult to frame their development in terms of a stage model that requires self-labeling. For example, Brooks and Quina (2009) found that, in a community sample of non-heterosexual women, approximately 16% endorsed their identity as, "I do not label my sexual orientation."

**Defining career development.** A third question regarding the validity of the bottleneck hypothesis is in how it defines career development. Specifically, Hetherington's (1991) description of the bottleneck emphasizes that time and energy will be devoted to sexual identity development in lieu of career development and that potential challenges may arise during normative career development activities (e.g., a student may artificially restrict their career options due to perceptions informed by their identity). However, she does not thoroughly explain what aspects of career development are neglected and how that may be observed. For instance, are students focused on their sexual identity less decided on their career than others? Or, are they decided, but reached that decision without enough thought? This makes the bottleneck hypothesis difficult to test, as the indicator of impeded career development is unclear. It may, therefore, be

useful to reexamine the bottleneck hypothesis using a model of career development that explores multiple facets of the process, which may help to identify where sexual minority students struggle – if they, in fact, do struggle. If done effectively, an updated examination of the bottleneck hypothesis and how sexual minority individuals' unique stressors relate to the career exploration and decision-making process may inform practices for improving these students' career preparation.

**Social Cognitive Model of Career Self-Management**

The social cognitive model of career self-management (CSM model) is a potentially fruitful framework for exploring sexual minority students' career development (Lent & Brown, 2013). This model is aimed at understanding the adaptive behaviors that people employ to anticipate and adjust to a wide array of challenges in educational and work settings. It has been applied to the study of various topics such as the job search process (Lim et al., 2016), multiple role planning (Roche et al., 2017), and workplace sexual identity management (Tatum, 2018; Tatum et al., 2017). Importantly, it has also been used to model the process of career exploration and decision-making in college student populations (Lent et al., 2016; Lent, Morris, et al., 2019; Lent, Wang, et al., 2019).

This model includes six classes of predictors: (a) personality traits (i.e., person inputs) and affective dispositions that predispose one to experience pleasant or unpleasant emotions, (b) contextual supports, referring to the resources and social supports available for pursuing one's goals and building self-efficacy, (c) prior learning experiences, which are experiences that contribute to one's sense of self-efficacy or outcome expectations, (d) self-efficacy, or confidence in one's ability to successfully "manage specific tasks

necessary for career preparation, entry, adjustment, or change" (Lent & Brown, 2013, p. 561), (e) outcome expectations, or beliefs about the outcomes of pursuing a particular career related action, and (f) exploratory goals, referring to the intentions to perform career related actions. There are three classes of outcomes in the model that are relevant to career decision-making: (a) exploratory/decisional actions, (b) affective outcomes, and (c) decisional status. According to the model, those with more favorable affective traits and greater levels of social supports, prior learning experiences, self-efficacy, and positive outcome expectations are more likely to have goals to pursue career advancing behavior in a given domain of career development, such as career decision-making or job finding.

Several studies have shown support for the CSM model. For example, Lent et al.'s (2016) results supported the hypothesized links of self-efficacy, outcome expectations, and social support to exploratory goals, and of self-efficacy to decisional anxiety and career decidedness. Additionally, social support was linked to career decidedness and decisional anxiety indirectly via self-efficacy. Lent and colleagues (2017) also reported that self-efficacy and outcome expectations predicted exploratory goals. However, only self-efficacy predicted career decidedness. Additionally, Lent, Morris, and colleagues (2019) conducted a longitudinal study applying the CSM model. They measured variables from the career self-management model, as well as the outcomes of career decision-making anxiety and career decidedness at three time points (beginning of academic year, four months later, and seven months later). They found that self-efficacy was a significant predictor of decision-making anxiety at both T1-T2 and T2-T3 comparison points, exploratory actions were predictive of career decidedness at

the T1-T2 comparison point, and social support was predictive of career decidedness at the T2-T3 comparison point. However, other hypothesized relationships, such as exploratory actions predicting decidedness and decision-making anxiety at the T2-T3 comparison point, were not supported.

The career-self management model could be applicable to the experiences of sexual minority students because it can be modified to account for universal factors (such as self-efficacy), while simultaneously allowing for the possibility that factors unique to sexual minority students may also contribute to their career exploration and decision-making. Though the social cognitive model of career self-management has not been applied to sexual minority college students' career exploration and decision-making, it has been applied to study other aspects of sexual minority individuals' career development. Tatum (2018) and Tatum et al. (2017) applied the career self-management model to the process of sexual minority workers' sexual identity disclosure self-management. In addition to social cognitive variables such as disclosure self-efficacy and outcome expectations, these researchers incorporated other identity related factors such as workplace climate and concealment motivation.

An additional, though indirect, support for the use of a CSM framework for sexual minority individuals is Lyons et al.'s (2010) study of interference in sexual identity and career development processes in sexual minority individuals. Several of the measures of predictor variables and career decidedness represent constructs in the CSM model. These include career decision-making supports, career decision-making self-efficacy, career decision-making outcome expectations, and career decidedness. Though the authors of this study did not conduct a path analysis of the relevant variables, they did

report that all the predictor variables had theory consistent correlations with career decidedness ($r$ = .25 - .42). This suggests that the CSM model may be applicable for sexual minority college students. To explore how sexual identity development can be operationalized in a way that is conducive to applying it to the CSM model, prior approaches will be reviewed below.

**Relating the Concept of Sexual Identity Development to the CSM Model**

In the previous studies of the bottleneck hypothesis, the challenge of defining and operationalizing indicators of sexual identity development has been addressed in differing manners. For instance, Tomlinson and Fassinger (2003) used the Lesbian Identity Questionnaire (Fassinger, 1998), which contained subscales that corresponded to four stages of identity development (awareness, exploration, deepening/commitment, and internalization/synthesis). Though this also constitutes the use of a stage model, Tomlinson and Fassinger addressed the notion that a single individual's experience may be represented by more than a psychological location in a single "stage" by assigning their participants a continuous score for subscales representing each stage. This represents a considerable conceptual improvement. However, it still prioritizes certain behaviors, such as being out or having one's sexual orientation be a central part of their identity, as requirements for attaining "advanced" identity development.

Schmidt and Nilsson's (2006) approach marked a considerable deviation, as it emphasized the normative struggles of early identity development via the use of a combined version of the identity confusion, internalized homonegativity, and difficult process subscales of Mohr and Fassinger's (2000) Lesbian and Gay Identity Scale. Finally, Lyons et al.'s (2010) study of sexual identity and career development

interferences did not measure sexual identity development directly. Instead, they surveyed the perceived interference between sexual identity development and career development.

Each of the approaches to defining sexual identity development has its advantages. If sexual identity development were applied to a social cognitive model, it may be best considered a person input, as it reflects a quality or characteristic that is internal to the individual, though one that can also be manifested externally (via behavior, appearance, or social affiliation) and be subject to social reactions. It might also arguably be considered as a potential barrier to career development in the bottleneck hypothesis. Given this ambiguity, it may be best to conceptualize it in the frame most appropriate within the broader context of social cognitive career theory (Lent et al., 1994). In this case, sexual identity development would be conceptualized as a person input, as the barriers referred to in social cognitive career theory are typically external barriers (e.g., heterosexist harassment) rather than internal qualities that may negatively impact the career development process.

Using this framework, it would be best to compartmentalize aspects of identity development (e.g., identity confusion or identity affirmation) into person "states." Schmidt and Nilsson's (2006) study used a similar approach by employing the subscales of the Lesbian and Gay Identity Scale (Mohr & Fassinger, 2000) that were most relevant to the concept of "sexual identity conflict." Following their example, this study will also employ measures representing sexual identity conflicts (i.e., the psychological conflicts associated with early sexual identity development). However, social aspects of sexual identity (e.g., sexual identity disclosure) will also be measured given their importance to

sexual identity development and inclusion within Hetherington's conceptualization of the developmental bottleneck.

**Summary**

The bottleneck hypothesis has been used to explain potential challenges that sexual minority college students face in their career development. However, the extent to which sexual minority students currently experience identity-based difficulties in their career development is unclear. Likewise, it is unclear just how much sexual identity development may contribute to such difficulties in career exploration and decision-making should they be present. From the literature reviewed above, I argue that the social cognitive model of career self-management could be useful in addressing both questions and could help practitioners better understand sexual minority college students' career exploration and decision-making. Thus, the present study examined whether sexual minority students have significantly more challenges with career exploration and decision-making and, if so, which factors are uniquely relevant to sexual minority college students' career decision-making progress.

# Tables

Table 1
*Demographic Characteristics*

| Variable | | Sexual Minority | | Heterosexual | |
|---|---|---|---|---|---|
| | | ***n*** | **%** | ***n*** | **%** |
| Gender | | | | | |
| | Woman | 141 | 62.7 | 178 | 62.0 |
| | Man | 65 | 28.9 | 109 | 38.0 |
| | Transgender Man | 4 | 1.8 | | |
| | Transgender Woman | 1 | .4 | | |
| | Non-Binary/Gender Nonconforming | 12 | 5.3 | | |
| | Other | 2 | .9 | | |
| Sexual Orientation | | | | | |
| | Lesbian | 23 | 10.2 | N/A | N/A |
| | Gay | 28 | 12.4 | | |
| | Bisexual | 144 | 64.0 | | |
| | Queer | 9 | 4.0 | | |
| | Other | 21 | 9.3 | | |
| Race | | | | | |
| | Black or African American | 27 | 12.0 | 40 | 13.9 |
| | Hispanic American or Latina/o | 39 | 17.3 | 16 | 5.6 |
| | White or European American | 125 | 55.6 | 176 | 61.3 |
| | Asian/Pacific Islander American | 12 | 5.3 | 37 | 12.9 |
| | Native American | 1 | .4 | 4 | 1.4 |
| | Multiracial | 21 | 9.3 | 11 | 3.8 |
| | Other | | | 3 | 1.0 |
| Academic Class | | | | | |
| | Freshman | 75 | 33.3 | 86 | 30.0 |
| | Sophomore | 63 | 28.0 | 89 | 31.0 |
| | Junior | 49 | 21.8 | 51 | 17.8 |
| | Senior | 38 | 16.9 | 61 | 21.3 |
| Geographic Region | | | | | |
| | North East | 29 | 12.9 | 35 | 12.2 |
| | Mid-Atlantic | 49 | 21.8 | 52 | 18.1 |
| | South East | 45 | 20.0 | 79 | 27.5 |
| | South West | 24 | 10.7 | 35 | 12.2 |
| | Mid-West | 44 | 19.6 | 57 | 19.9 |
| | West | 22 | 9.8 | 17 | 5.9 |
| | Northwest | 12 | 5.3 | 12 | 4.2 |

*Note.* Sexual minority $n = 225$, Heterosexual $n = 287$

Table 2
*Descriptive Statistics of Major Variables (SM)*

| Variable | Mean | Std Dev. | Minimum Value | Maximum Value | Skew | | Kurtosis | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Statistic | S.E. | Statistic | S.E. |
| Self-Efficacy | 3.77 | .73 | 1.00 | 5.00 | -.398 | .162 | .335 | .323 |
| Outcome Expectations | 4.13 | .58 | 1.00 | 5.00 | -.915 | .162 | 3.051 | .323 |
| Social Support | 3.92 | .80 | 1.25 | 5.00 | -.849 | .162 | .555 | .323 |
| Identity Uncertainty | 2.64 | 1.16 | 1.00 | 6.00 | .502 | .162 | -.284 | .323 |
| Internalized Homonegativity | 2.14 | 1.22 | 1.00 | 6.00 | 1.113 | .162 | .458 | .323 |
| Difficult Process | 3.57 | 1.37 | 1.00 | 6.00 | -.069 | .162 | -.842 | .323 |
| Identity Disclosure | 36.65 | 22.05 | .00 | 90.00 | .199 | .162 | -.758 | .323 |
| Identity Concealment | 5.71 | 2.14 | 1.00 | 10.00 | -.230 | .162 | -.495 | .323 |
| Exploratory Goals | 3.98 | .55 | 1.20 | 5.00 | -.976 | .162 | 3.406 | .323 |
| Exploratory Actions | 3.39 | .79 | 1.00 | 5.00 | -.411 | .162 | .020 | .323 |
| Decisional Anxiety | 3.84 | 1.30 | 1.00 | 6.00 | -.252 | .162 | -.585 | .323 |
| Career Decidedness | 4.67 | 1.05 | 1.67 | 6.00 | -.742 | .162 | -.089 | .323 |

*Note.* SM = Sexual minority, $n$ = 225

Table 3
*Descriptive Statistics of Major Variables (HT)*

| Variable | Mean | Std Dev. | Minimum Value | Maximum Value | Skew | | Kurtosis | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Statistic | S.E. | Statistic | S.E. |
| Self-Efficacy | 3.74 | .70 | 1.88 | 5.00 | -.190 | .144 | -.244 | .287 |
| Outcome Expectations | 4.11 | .61 | 1.63 | 5.00 | -.854 | .144 | 1.424 | .287 |
| Social Support | 4.03 | .74 | 1.63 | 5.00 | -.821 | .144 | .362 | .287 |
| Exploratory Goals | 3.90 | .58 | 2.10 | 5.00 | -.437 | .144 | .124 | .287 |
| Exploratory Actions | 3.35 | .78 | 1.09 | 5.00 | -.136 | .144 | -.256 | .287 |
| Decisional Anxiety | 3.77 | 1.29 | 1.00 | 6.00 | -.186 | .144 | -.732 | .287 |
| Career Decidedness | 4.52 | 1.18 | 1.33 | 6.00 | -.687 | .144 | -.333 | .287 |

*Note.* HT = Heterosexual, $n$ = 287

Table 4
*Bivariate Correlations Amongst Independent and Dependent Variables*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Self-efficacy | -- | .31*** | .31*** | . | . | . | . | . | .34*** | .45** | -.40*** | .41*** |
| 2. Outcome expectations | .32*** | -- | .35*** | . | . | . | . | . | .45*** | .23*** | .13* | .07 |
| 3. Social Support | .45*** | .27*** | -- | . | . | . | . | . | .46*** | .34*** | -.08 | .15** |
| 4. Identity Uncertainty | -.04 | -.12 | -.05 | -- | . | . | . | . | . | . | . | . |
| 5. Internalized Homonegativity | -.16* | -.05 | -.27*** | .32*** | -- | . | . | . | . | . | . | . |
| 6. Difficult Process | -.10 | .16* | -.20** | .32*** | .43*** | -- | . | . | . | . | . | . |
| 7. Identity Disclosure | .04 | -.03 | .17* | -.15* | -.19** | -.15* | -- | . | . | . | . | . |
| 8. Identity Concealment | -.16* | .05 | -.25*** | .18** | .32*** | .43*** | -.39*** | -- | . | . | . | . |
| 9. Exploratory Goals | .30*** | .39*** | .18** | .02 | -.05 | -.01 | .11 | -.17* | -- | .46*** | .05 | .04 |
| 10. Exploratory Actions | .29*** | .25*** | .22*** | -.08 | -.02 | -.03 | .13 | -.16* | .41*** | -- | -.14* | .28*** |
| 11. Decisional Anxiety | -.41*** | .04 | -.29*** | .05 | -.03 | .12 | .05 | .16* | .02 | -.04 | -- | -.38*** |
| 12. Career Decidedness | .46*** | .16* | .26*** | -.02 | -.02 | -.04 | .04 | -.08 | .11 | .16* | -.44*** | -- |
| **SM Cronbach's α** | 0.89 | 0.84 | 0.90 | 0.74 | 0.85 | 0.79 | 0.75 | 0.75 | 0.82 | 0.86 | 0.82 | 0.68 |
| **HT Cronbach's α** | 0.89 | 0.86 | 0.89 | . | . | . | . | . | 0.82 | 0.86 | 0.84 | 0.77 |

*Note.* Sexual minority (SM) participants ($n$ = 225) are listed below the diagonal and heterosexual (HT) participants ($n$ = 287) are listed above the diagonal. An * indicates a significant correlation at the $p < .05$ level an ** indicates a significant correlation at the $p < .01$ level, and *** indicates a significant correlation at the $p < .001$ level.

Table 5
*Mean Comparisons*

| Variable | Sexual Minority | | Heterosexual | | | | |
|---|---|---|---|---|---|---|---|
| | **Mean** | **Std Dev.** | **Mean** | **Std Dev.** | ***t*(510)** | ***p*** | **Cohen's *d*** |
| Self-Efficacy | 3.77 | .73 | 3.74 | .70 | .475 | .635 | .04 |
| Outcome Expectations | 4.13 | .58 | 4.11 | .61 | .289 | .773 | .03 |
| Social Support | 3.92 | .80 | 4.03 | .74 | -1.603 | .110 | .14 |
| Exploratory Goals | 3.98 | .55 | 3.90 | .58 | 1.570 | .117 | .14 |
| Exploratory Actions | 3.39 | .79 | 3.35 | .78 | .433 | .665 | .05 |
| Decisional Anxiety | 3.84 | 1.30 | 3.77 | 1.29 | .541 | .589 | .05 |
| Career Decidedness | 4.67 | 1.05 | 4.52 | 1.18 | 1.577* | .115 | .13 |

*Note.* Sexual minority $n = 225$, Heterosexual $n = 287$. None of the comparisons are significant at the $\alpha = .05$ level. *This test violated assumptions of equality of variances, thus the test was modified to adjust for this violation.

Table 6

*Hypothesis 1 and 5 Regressions – Exploratory Goals and Identity Variables (SM)*

| **Variable** | ***B*** | ***SE B*** | ***β*** | ***df*** | ***R*** | $R^2$ | $\Delta R^2$ | $\Delta F$ |
|---|---|---|---|---|---|---|---|---|
| Step 1 | | | | 3, 221 | .43 | .18 | .18 | 16.42*** |
| Self-Efficacy | .14 | .05 | .19** | | | | | |
| Outcome Expectations | .31 | .06 | .32*** | | | | | |
| Social Support | .01 | .05 | .01 | | | | | |
| Step 2 | | | | 5, 216 | .47 | .22 | .04 | 2.32* |
| Self-Efficacy | .13 | .05 | .18* | | | | | |
| Outcome Expectations | .35 | .06 | .37*** | | | | | |
| Social Support | -.03 | .05 | -.04 | | | | | |
| Identity Uncertainty | .05 | .03 | .11 | | | | | |
| Internalized Homonegativity | .01 | .03 | .03 | | | | | |
| Difficult Process | -.01 | .03 | -.03 | | | | | |
| Identity Disclosure | .00 | .00 | .08 | | | | | |
| Identity Concealment | -.04 | .02 | -.15* | | | | | |

*Note.* SM = Sexual minority, * $p$ <.05, ** $p$ < .01, *** $p$ < .001, $n$ = 225

Table 7

*Hypothesis 2 Regression – Exploratory Goals (HT)*

| **Variable** | ***B*** | ***SE B*** | ***β*** | ***df*** | ***R*** | $R^2$ | $\Delta R^2$ | $\Delta F$ |
|---|---|---|---|---|---|---|---|---|
| Step 1 | | | | 3, 283 | .58 | .33 | .33 | 46.51*** |
| Self-Efficacy | .13 | .04 | .16** | | | | | |
| Outcome Expectations | .28 | .05 | .29*** | | | | | |
| Social Support | .25 | .04 | .31*** | | | | | |

*Note.* HT = Heterosexual, * $p$ <.05, ** $p$ < .01, *** $p$ < .001, $n$ = 287

Table 8

*Hypothesis 3a and 6a Regressions – Decisional Anxiety and Identity Variables (SM)*

| **Variable** | ***B*** | ***SE B*** | ***β*** | ***df*** | ***R*** | $R^2$ | $\Delta R^2$ | ***ΔF*** |
|---|---|---|---|---|---|---|---|---|
| Step 1 | | | | 2, 222 | .42 | .18 | .18 | 24.00*** |
| Self-Efficacy | -.62 | .12 | -.35*** | | | | | |
| Social Support | -.21 | .11 | -.13 | | | | | |
| Step 2 | | | | 5, 217 | .48 | .23 | .05 | 3.05* |
| Self-Efficacy | -.61 | .12 | -.34*** | | | | | |
| Social Support | -.25 | .11 | -.15* | | | | | |
| Identity Uncertainty | .07 | .07 | .07 | | | | | |
| Internalized Homonegativity | -.22 | .07 | -.21** | | | | | |
| Difficult Process | .08 | .07 | .09 | | | | | |
| Identity Disclosure | .01 | .00 | .12 | | | | | |
| Identity Concealment | .08 | .04 | .14 | | | | | |

*Note.* SM = Sexual minority, * $p < .05$, ** $p < .01$, *** $p < .001$, $n = 225$

Table 9

*Hypothesis 4a Hierarchical Regression – Decisional Anxiety (HT)*

| **Variable** | ***B*** | ***SE B*** | ***β*** | ***df*** | ***R*** | $R^2$ | $\Delta R^2$ | $\Delta F$ |
|---|---|---|---|---|---|---|---|---|
| Step 1 | | | | 2, 284 | .40 | .16 | .16 | 27.61*** |
| Self-Efficacy | -.77 | .11 | -.42*** | | | | | |
| Social Support | .09 | .10 | .05 | | | | | |

*Note.* HT = Heterosexual, * $p$ <.05, ** $p$ < .01, *** $p$ < .001, $n$ = 287

Table 10

*Hypothesis 3b and 6b Regressions – Career Decidedness and Identity Variables (SM)*

| **Variable** | ***B*** | ***SE B*** | ***β*** | ***df*** | ***R*** | $R^2$ | $\Delta R^2$ | $\Delta F$ |
|---|---|---|---|---|---|---|---|---|
| Step 1 | | | | 2, 222 | .47 | $.22^{+}$ | .22 | 30.87*** |
| Self-Efficacy | .63 | .10 | .43*** | | | | | |
| Social Support | .08 | .09 | .06 | | | | | |
| Step 2 | | | | 5, 217 | .47 | $.22^{+}$ | $.01^{+}$ | .348 |
| Self-Efficacy | .63 | .10 | .44*** | | | | | |
| Social Support | .10 | .09 | .08 | | | | | |
| Identity Uncertainty | -.02 | .06 | -.02 | | | | | |
| Internalized Homonegativity | .08 | .06 | .09 | | | | | |
| Difficult Process | -.01 | .06 | -.01 | | | | | |
| Identity Disclosure | .00 | .00 | .02 | | | | | |
| Identity Concealment | .00 | .04 | .00 | | | | | |

*Note.* SM = Sexual minority, * $p < .05$, ** $p < .01$, *** $p < .001$, $n = 225$, + = number do not add due to rounding

Table 11

*Hypothesis 4b Hierarchical Regression – Career Decidedness (HT)*

| **Variable** | ***B*** | ***SE B*** | ***β*** | ***df*** | ***R*** | $R^2$ | $\Delta R^2$ | $\Delta F$ |
|---|---|---|---|---|---|---|---|---|
| Step 1 | | | | 2, 284 | .41 | .17 | .17 | 29.00*** |
| Self-Efficacy | .68 | .10 | .40*** | | | | | |
| Social Support | .05 | .09 | .03 | | | | | |

*Note.* HT = Heterosexual, * $p < .05$, ** $p < .01$, *** $p < .001$, $n = 287$

Table 12

*Research Question 2 – Exploratory Goals Interaction Analyses*

| **Variable** | ***B*** | ***SE B*** | ***β*** | ***df*** | ***R*** | $R^2$ | $\Delta R^2$ | $\Delta F$ |
|---|---|---|---|---|---|---|---|---|
| Step 1 | | | | 4, 507 | .50 | .25 | .25 | 42.05*** |
| Self-Efficacy | .09 | .02 | .16*** | | | | | |
| Outcome Expectations | .18 | .02 | .32*** | | | | | |
| Social Support | .10 | .02 | .18*** | | | | | |
| Sexual Orientation | -.04 | .02 | -.07 | | | | | |
| Step 2 | | | | 3, 504 | .52 | .27 | .02 | 5.64*** |
| Self-Efficacy | .10 | .02 | .17*** | | | | | |
| Outcome Expectations | .17 | .02 | .31*** | | | | | |
| Social Support | .11 | .02 | .19*** | | | | | |
| Sexual Orientation | -.04 | .02 | -.07 | | | | | |
| Self-Efficacy X Sexual Orientation | .00 | .02 | -.01 | | | | | |
| Outcome Expectations X Sexual Orientation | -.01 | .02 | -.01 | | | | | |
| Social Support X Sexual Orientation | .09 | .02 | .16*** | | | | | |

*Note.* * $p < .05$, ** $p < .01$, *** $p < .001$, $N = 512$

Table 13

*Research Question 2 – Decisional Anxiety Interaction Analyses*

| **Variable** | ***B*** | ***SE B*** | ***β*** | ***df*** | ***R*** | $R^2$ | $\Delta R^2$ | $\Delta F$ |
|---|---|---|---|---|---|---|---|---|
| Step 1 | | | | 3, 508 | .40 | .16 | .16 | 33.05** |
| Self-Efficacy | -.51 | .06 | -.39*** | | | | | |
| Social Support | -.04 | .06 | -.03 | | | | | |
| Sexual Orientation | -.04 | .05 | -.03 | | | | | |
| Step 2 | | | | 2, 506 | .41 | .17 | .01 | $2.03^{+}$ |
| Self-Efficacy | -.50 | .06 | -.39*** | | | | | |
| Social Support | -.03 | .06 | -.03 | | | | | |
| Sexual Orientation | -.04 | .05 | -.03 | | | | | |
| Self-Efficacy X Sexual Orientation | -.05 | .06 | -.04 | | | | | |
| Social Support X Sexual Orientation | .11 | .06 | $.09^{*+}$ | | | | | |

*Note.* * $p < .05$, ** $p < .01$, *** $p < .001$, $N = 512$, + = was not counted as significant given the full model did not approach significance.

Table 14

*Research Question 2 – Career Decidedness Interaction Analyses*

| **Variable** | ***B*** | ***SE B*** | ***β*** | ***df*** | ***R*** | $R^2$ | $\Delta R^2$ | $\Delta F$ |
|---|---|---|---|---|---|---|---|---|
| Step 1 | | | | 3, 508 | .44 | .19 | .19 | 40.12*** |
| Self-Efficacy | .47 | .05 | .41*** | | | | | |
| Social Support | .05 | .05 | .04 | | | | | |
| Sexual Orientation | -.07 | .05 | -.06 | | | | | |
| Step 2 | | | | 2, 506 | .44 | .19 | .00 | .09 |
| Self-Efficacy | .47 | .05 | .41*** | | | | | |
| Social Support | .05 | .05 | .04 | | | | | |
| Sexual Orientation | -.07 | .05 | -.06 | | | | | |
| Self-Efficacy X Sexual Orientation | .02 | .05 | .02 | | | | | |
| Social Support X Sexual Orientation | -.01 | .05 | -.01 | | | | | |

*Note.* * $p < .05$, ** $p < .01$, *** $p < .001$, $N = 512$

# Appendices

## Appendix A: Demographics/Eligibility Questionnaire

Please provide the following demographic information:

Age:

_____

Gender:

□ Man
□ Woman
□Transwoman
□Transman
□Non-Binary/Gender Non-conforming
□Other (Please Specify)

Sexual Orientation:
□Heterosexual
□Gay
□Lesbian
□Bisexual
□Queer
□Questioning
□Asexual
□Other (Please Specify)

Race/Ethnicity:

□ Black or African American
□ Hispanic American or Latino/a
□ White or European American
□ Asian/Pacific Islander American
□ Native American
□ Multiracial
□ Other (Please Specify)

Year in School:

- Freshman
- Sophomore
- Junior
- Senior

University Region:

- Northwest (e.g., OR, WY, MT)
- West (e.g., CA, AK, HI)
- Southwest (e.g., TX, OK, UT)
- Midwest (e.g., KS, NE, IN)
- Southeast (e.g., FL, LA, NC)
- Northeast (e.g., MA, CT, ME)
- Mid-Atlantic (e.g., VA, MD, NY)

Academic Major:

_____

*Sexual Minority Only*

At what age did you first think you might be LGBQ?

- Enter Answer _____

At what age did you know you are LGBQ?

- Enter Answer_____
- I Am Still Questioning

At what age did you first tell a close friend or family member that you are LGBQ?

- Enter Answer_____
- I have not told anyone

## Appendix B: Consent Form – Sexual Minority Version

| | |
|---|---|
| **Project Title** | LGBQ College Students Career Attitudes and Experiences Study |
| **Purpose of the Study** | This research is being conducted by Taylor Morris, MA, and Robert Lent, PhD, of the University of Maryland, College Park. We are inviting you to participate in this research project because you: (a) are at least 18 years old, (b) are an undergraduate college student, (c) attend college in the United States, and (d) identify as lesbian, gay, bisexual, or Queer (Note: this includes identifying as a transgender LGBQ person).<br><br>The purpose of this research is to ask about sexual minority college students' college experiences. In addition to career related questions, some questions specific to sexual minority students, which will help us examine factors that relate to sexual minority students' career exploration process. |
| **Procedures** | This study consists of a 10-minute survey. The survey will ask you how you feel about your career related college experiences. For example, the survey will ask you questions such as, "How much confidence do you have in your ability to…figure out which career options could provide a good fit for your personality?" and rate your agreement with statements such as, "Over the next two months…I intend to spend more time learning about careers than I have been." It will also include items related to your sexual orientation, such as asking you to rate your agreement with the statement, "I have felt comfortable with my sexual identity just about from the start." |
| **Compensation** | As a result of your participation, you will be provided with the agreed-upon compensation for providing a quality completion of this survey. The compensation will be provided to you by your panel provider. |
| **Potential Risks and Discomforts** | The main risks of participating are potential reactions to the survey items. Specifically, you may become bored or feel uncomfortable answering some of the survey questions. Also, some questions ask about sensitive information. If this happens, please remember that you can quit the survey at any time. Additionally, if you have concerns about privacy, you are welcome to complete the survey in a comfortable environment of your choosing. |
| **Potential Benefits** | The survey is not designed to benefit you directly, though it is possible that you may benefit from reflecting on how your sexual identity relates to your career development. The study may also help us (the investigators) provide universities with information that may help sexual minority students succeed in college. |
| **Confidentiality** | You will not be required to provide information that may link your identity to your survey responses. We will do our best to minimize any potential loss of confidentiality. The data will be collected via Qualtrics® and stored on their database, which is only accessible with a password. Once the information is downloaded, it will be stored in a password-protected computer. Any reports Any reports will be based on all survey responses. This means that your response will never be reported individually. |

| | |
|---|---|
| **Right to Withdraw and Questions** | Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time by closing your browser. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.<br><br>If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please feel free to contact the investigator(s):<br><br>Taylor Morris at trm12@terpmail.umd.edu<br>3214 Mail Room, Benjamin Building,<br>University of Maryland, College Park, MD 20742<br>(301) 405-2878 |
| **Participant Rights** | If you have questions about your rights as a research participant or wish to report a research-related injury, please contact:<br><br>**University of Maryland College Park**<br>**Institutional Review Board Office**<br>**1204 Marie Mount Hall**<br>**College Park, Maryland, 20742**<br>**E-mail: irb@umd.edu**<br>**Telephone: 301-405-0678**<br><br>This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects. |
| **Statement of Consent** | By selecting your choice below you are indicating your right to consent or not consent electronically.<br><br>Selecting "Yes, I Consent" and clicking on the "Continue" button below indicates that you are at least 18 years old and have read and understand the terms of this study and thus voluntarily agree to participate.<br><br>If you do NOT wish to participate in this study, please select "No, I DO NOT Consent" and click "Continue" to decline participation. |

## Appendix C: Consent Form – Heterosexual Version

| | |
|---|---|
| **Project Title** | College Students Career Attitudes and Experiences Study |
| **Purpose of the Study** | This research is being conducted by Taylor Morris, MA, and Robert Lent, PhD, of the University of Maryland, College Park. We are inviting you to participate in this research project because you: (a) are at least 18 years old, (b) are an undergraduate college student, and (c) attend college in the United States.<br><br>The purpose of this research is to ask about college students' college experiences to examine factors that relate to college students' career exploration process. |
| **Procedures** | This study consists of a 10-minute survey. The survey will ask you how you feel about your career related college experiences. For example, the survey will ask you questions such as, "How much confidence do you have in your ability to…figure out which career options could provide a good fit for your personality?" and rate your agreement with statements such as, "Over the next two months…I intend to spend more time learning about careers than I have been." |
| **Compensation** | As a result of your participation, you will be provided with the agreed-upon compensation for providing a quality completion of this survey. The compensation will be provided to you by your panel provider. |
| **Potential Risks and Discomforts** | The main risks of participating are potential reactions to the survey items. Specifically, you may become bored or feel uncomfortable answering some of the survey questions. Also, some questions ask about sensitive information. If this happens, please remember that you can quit the survey at any time. Additionally, if you have concerns about privacy, you are welcome to complete the survey in a comfortable environment of your choosing. |
| **Potential Benefits** | The survey is not designed to benefit you directly, though it is possible that you may benefit from reflecting on your career development. The study may also help us (the investigators) provide universities with information that may help students succeed in college. |
| **Confidentiality** | You will not be required to provide information that may link your identity to your survey responses. We will do our best to minimize any potential loss of confidentiality. The data will be collected via Qualtrics® and stored on their database, which is only accessible with a password. Once the information is downloaded, it will be stored in a password-protected computer. Any reports will be based on all survey responses. This means that your response will never be reported individually. |
| **Right to Withdraw and Questions** | Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time by closing your browser. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify. |

| | |
|---|---|
| | If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please feel free to contact the investigator(s):<br><br>Taylor Morris at trm12@terpmail.umd.edu<br>3214 Mail Room, Benjamin Building,<br>University of Maryland, College Park, MD 20742<br>(301) 405-2878 |
| **Participant Rights** | If you have questions about your rights as a research participant or wish to report a research-related injury, please contact:<br><br>**University of Maryland College Park**<br>**Institutional Review Board Office**<br>**1204 Marie Mount Hall**<br>**College Park, Maryland, 20742**<br>**E-mail: irb@umd.edu**<br>**Telephone: 301-405-0678**<br><br>This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects. |
| **Statement of Consent** | By selecting your choice below you are indicating your right to consent or not consent electronically.<br><br>Selecting "Yes, I Consent" and clicking on the "Continue" button below indicates that you are at least 18 years old and have read and understand the terms of this study and thus voluntarily agree to participate.<br><br>If you do NOT wish to participate in this study, please select "No, I DO NOT Consent" and click "Continue" to decline participation. |

## Appendix D: Survey Materials

### Career Exploration and Decision Self-Efficacy, Brief Decision Scale (CEDSE-BD; Lent et al., 2016)

Instructions: The following is a list of activities involved in exploring and deciding about career options. Please indicate how much confidence you have in your ability to do each activity. Use the 0 to 4 scale to indicate your degree of confidence.

| No confidence at all | Very little confidence | Moderate confidence | Much confidence | Complete confidence |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 |

**How much confidence do you have in your ability to:**

1. Figure out which career options could provide a good fit for your personality
2. Identify careers that best use your skills
3. Pick the best-fitting career option for you from a list of your ideal careers
4. Learn more about careers you might enjoy
5. Match your skills, values, and interests to relevant occupations
6. Make a well-informed choice about which career path to pursue
7. Learn more about jobs that could offer things that are important to you
8. Identify careers that best match your interests

**Career Decision-Making Outcome Expectancies Scale (Modification of Betz & Voyten, 1997)**

Instructions: This scale is concerned with your beliefs about the usefulness of doing different types of career planning activities. Using the scale below, please indicate the extent to which you agree or disagree with each of the following statements.

| Strongly Disagree | Disagree | Unsure | Agree | Strongly Agree |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

1. If I learn more about different careers, I will make a better career decision.
2. If I know my interests and abilities, then I will be able to choose a good career.
3. If I know about the education I need for different careers, I will make a better career decision.
4. If I spend enough time gathering information about careers, I can learn what I need to know to make a good decision.
5. If I learn more about my career values (the things I most want from a career), I will make a better career decision.
6. If I put enough time into deciding on career options, it will increase my chances of making a better decision.
7. If I carefully compare the pros and cons of different career options, I will make a better career decision.
8. If I learn more about which careers might best match my personality, I will make a better career choice.

**Support–Guidance Subscale of the Influence of Others on Academic and Career Decisions Scale (Social Support; Nauta & Kokaly, 2001)**

Instructions: Using the scale below, please indicate the extent to which you agree or disagree with each of the following statements.

| Strongly Disagree | Disagree | Unsure | Agree | Strongly Agree |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

1. There is someone I can count on to be there if I need support when I make academic and career choices.

2. There is someone who helps me weigh the pros and cons of academic and career choices I make.

3. There is someone who helps me consider my academic and career options.

4. There is no one who shows me how to get where I am going with my education or career. (R)

5. There is someone who supports me in the academic and career choices I make.

6. There is someone who stands by me when I make important academic and career decisions.

7. There is no one who supports me when I make academic and career decisions. (R)

8. There is someone who tells or shows me general strategies for a successful life.

**Sexual Identity Conflicts (Lesbian, Gay, and Bisexual, Identity Scale, Mohr & Kendra, 2011)**

Instructions: For each of the following questions, please mark the response that best indicates your current experience as an LGB person. Please be as honest as possible: Indicate how you really feel now, not how you think you should feel. There is no need to think too much about any one question. Answer each question according to your initial reaction and then move on to the next.

| Strongly Disagree | Disagree | Somewhat Disagree | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |

Note: Order will be shuffled in administration

Identity Uncertainty

1. I'm not totally sure what my sexual orientation is.
2. I get very confused when I try to figure out my sexual orientation.
3. I keep changing my mind about my sexual orientation.
4. I can't decide whether I am bisexual or homosexual.

Internalized Homophobia

5. If it were possible, I would choose to be straight.
6. I wish I were heterosexual.
7. I believe it is unfair that I am attracted to people of the same sex.

Difficult Process

8. Admitting to myself that I'm an LGB person has been a very painful process.
9. Admitting to myself that I'm an LGB person has been a very slow process.
10. I have felt comfortable with my sexual identity just about from the start.

**Sexual Identity Management - Nebraska Outness Scale (Meidlinger & Hope, 2014)**

**NOS-D (Disclosure)**

What percent of the people in this group do you think are aware of your sexual orientation (meaning they are aware of whether you consider yourself straight, gay, etc.)?

Members of your immediate family (e.g., parents and siblings)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |

Members of your extended family (e.g., aunts, uncles, grandparents, cousins)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |

People you socialize with (e.g., friends and acquaintances)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |

People at your work/school (e.g., coworkers, supervisors, instructors, students)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |

Strangers (e.g., someone you have a casual conversation within line at the store)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |

NOS-C (Concealment)

How often do you avoid talking about topics related to or otherwise indicating your sexual orientation (e.g., not talking about your significant other, changing your mannerisms) when interacting with members of these groups?

Members of your immediate family (e.g., parents and siblings)

| Never Avoid | | | | | | | | | Always Avoid |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Members of your extended family (e.g., aunts, uncles, grandparents, cousins)

| Never Avoid | | | | | | | | | Always Avoid |
|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

People you socialize with (e.g., friends and acquaintances)

| Never Avoid | | | | | | | | | Always Avoid |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

People at your work/school (e.g., coworkers, supervisors, instructors, students**)**

| Never Avoid | | | | | | | | | Always Avoid |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Strangers (e.g., someone you have a casual conversation within line at the store)

| Never Avoid | | | | | | | | | Always Avoid |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

**Career Decision-Making Exploratory Intentions Scale (Exploratory Goals; Modification of Betz & Voyten, 1997)**

Instructions: This scale asks about whether you intend to do different types of career planning activities over the next few months. Using the scale below, please indicate the extent to which you agree or disagree with each of the following statements.

| Strongly Disagree | Disagree | Unsure | Agree | Strongly Agree |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

Over the next two months…

1. I intend to spend more time learning about careers than I have been.
2. I plan to talk to lots of people about careers.
3. I am committed to learning more about my abilities and interests.
4. I intend to get all the education I need for my career choice.
5. I plan to talk to advisors or counselors in my college about career opportunities for different majors.
6. I plan to spend more time thinking about which careers best match my interests and abilities
7. I intend to learn more about how my values (the things I most want from a career) can be met by different careers
8. I plan to spend time comparing the advantages and disadvantages of different career options
9. I plan to identify my most likely career direction (or a few likely directions)
10. I intend to spend time thinking about how to put my career plans into action

**Career Exploration Actions Scale CAS (Exploratory Actions; Developed by Lent et al., 2014)**

Instructions: Please indicate how much of the following career planning activities you have done over the past 4 months.

| Little (or not at all) | Somewhat | A Moderate Amount | A Substantial Amount | A Great Deal |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

To what extent have you done the following *over the past 4 months*?

1. … thought about careers that interest you?
2. … read about careers that interest you?
3. … searched the internet to find careers that appeal to you?
4. … sought out people to talk to or interview about careers that appeal to you?
5. … discussed possible career options with a friend or relative?
6. … met with an advisor or counselor to explore careers that might suit you?
7. … made written plans about how to pursue a career of interest to you?
8. …thought about how your interests would fit different career paths?
9. …thought about how your skills would fit different career paths?
10. …thought about how your career values (the things you most want from a career) could be met by different options?
11. …compared the pros and cons of different career options?

**Decisional Anxiety (from the CCA/CIP-65 Scales, Hacker et al., 2013)**

Instructions: Read each statement carefully and indicate how well it describes you, using the disagree/agree scale to select your answer. Although some items may seem similar, try to answer each one without considering your other answers.

| Strongly Disagree | Moderately Disagree | Slightly Disagree | Slightly Agree | Moderately Agree | Strongly Agree |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |

1. I often feel discouraged about having to make a career decision.
2. I sometimes feel directionless.
3. I often feel nervous when thinking about having to pick a career.

**Modified Career Decidedness (Penn & Lent, 2018)**

Instructions: Please respond to the following questions regarding your level of career decidedness.

How much do you agree or disagree with the following two statements?

| Strongly Disagree | Moderately Disagree | Slightly Disagree | Slightly Agree | Moderately Agree | Strongly Agree |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |

1. I have narrowed my career options down to a general occupational field that I intend to enter, for example, engineering, literature, or the social sciences.
2. I have decided on a specific occupation or job title that I plan to pursue, for example, computer engineer, writer, or psychologist.

3. How decided about your overall career direction are you at this point in time?

| Very Undecided | Moderately Undecided | Slightly Undecided | Slightly Decided | Moderately Decided | Very Decided |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |

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